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THE MINING LAWS
of
OHIO, INDIANA and ILLINOIS

Presented in part fulfillment of the requirements
for the degree of Doctor of Philosophy.

by

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University of Cincinnati

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INTRODUCTION.

The place of social legislation in the history of
mining in Ohio, Indiana and Illinois.

Mining has been carried on in Ohio, Indiana and Illinois, on a small scale ever since the beginning of the nineteenth century and on a larger scale since the middle of the century. Mining laws, however, belong only to the last quarter of that century.

The reasons why social regulation of mining appeared just when it did, may be summed up in three phrases that tell the history of mining from three points of view: the growth of *the* industry; its increased perils; and the awakening of public opinion with regard to the rights of the toilers.

A. The Beginnings and Growth of the Industry in Ohio, Indiana and Illinois.

Over ten thousand square miles of the southeastern part of Ohio are in the great Appalachian coal belt. The first discovery of coal in this region occurred probably when a bank of coal was found on fire in Tuscarawas County, over a hundred and fifty years ago. The exact date when mining operations were begun in Ohio is not known, but it is supposed to have been in the first quarter of the nineteenth century. The first shipment of which there is any record was made from Summit County to Lake Erie, in 1828, but it is not known how much coal was in the shipment. (1)

(1) For an interesting account of early mining in Ohio, see The Practical Miner's Companion, by Andrew Roy (Columbus 1885) pp. 65 - 85. See also Mines and Quarries, Special Reports of the Bureau of the Census, 1902, p. 694. Report of the Inspector of Mines of Ohio, 1875, p. 95.

In 1838, the entire coal production of Ohio, was reported as 119,952 shorttons. Since that time it has more than doubled every decade, until 1890. In 1898, the production was fourteen and one-half million tons; in 1902, it was twenty-three and one-half million, valued at nearly twenty-seven million dollars, and representing a capital investment of some two million dollars. (2)

(2) Special Reports of the Bureau of the Census: Mines and Quarries 1902, Government Prin. Office 1905, p. 283.

The output for 1906 was 27, 213, 495 tons according to the Report of the Chief Inspector.

Coal was discovered in Illinois in 1679, by Father Hennepin, whose Journal, published in 1698, contained a map illustrating his travels. An outcrop of coal is shown on the Illinois River in the northern part of the State near the present city of Ottawa. This was the first discovery of coal in the United States. Mining operations probably began, however, in the southern part of the State. In 1810, coal was mined in Jackson County, on the Big Muddy River, along an outcrop in the bluffs, and shipped in a flat-boat to New Orleans, where the sugar refineries required it to maintain a steady heat. In 1832, several boatloads were shipped in a flat-boat ; in 1833, 6,000 tons were mined in St. Clair county and taken to St. Louis in wagons. In

1840, coal was being mined in nineteen counties in the State.

(3) From the six thousand tons recorded in 1833, the out-

(3) Annual Coal Report of the Illinois
Bureau of Labor Statistics, 1902, p. 2.

put has grown wonderfully without break to the present day.

In 1902, it amounted to nearly thirty-three million tons,
valued^{at} over thirty-four million dollars and representing a
capital of nearly three millions of dollars. (4)

(4) Mines and Quarries 1902, etc. p. 207.
In 1906, the Illinois Bureau of Labor Statis-
tics reported the output as 38,387,581 tons.

The southwestern portion of Indiana overlies the same
strata of coal that are found under the greater part of Illi-
nois, and a large part of Kentucky. Iowa and Missouri. Coal
was first noticed in Indiana as early as 1763. It was men-
tioned in the field notes of a township surveyor in 1804.
Eight years later, a quantity was taken aboard the steam-boat
Orleans by Robert Fulton in Perry County. In 1834, it was
being mined at numerous points in the State and advertised
for sale. From this time on we find^{the} industry growing rapidly.
In 1851, Indiana block coal was discovered and in 1852 it
had already found a market. (5) The records show that
in 1870, the production was less than one-half million tons;

(5) The Development of the Coal Industry
in Indiana and a Chronology of Coal mining
by Professor H. H. Stock, in the Report of
the Mine Inspector, 1898.

-- Annual Report of the Department of
Mines of Pennsylvania, Part 11. Bituminous
1905, p. XXVII.

ten years later, a million and a half; that in the
next decade it doubled; that in 1900, it hovered around six
and one-half million tons; that in 1902, it amounted to al-

most nine and one-half millions valued at over ten million dollars, (6)

(6) Special Reports of the Bureau of the Census: Mines and Quarries: 1902, p. 213.
In 1906, the output was 11,422,027 tons.

and representing a capital investment of about seven hundred and twenty-nine thousand dollars.

The key to the growth of the industry is found in the fluctuations in the demand for coal. Thus, Indiana's fields were the last to be developed, because Indiana was covered with forests that furnished a plentiful supply of fire-wood until within the seventies, and because there were, at that time, no manufacturing cities easily accessible by rail or canal from the Indiana coal fields. Scarcely had the competition with the wood of the forests disappeared, when a new rival appeared against coal in Indiana--natural gas. A few quotations from official reports will show a remarkable development recorded in prophecy and retrospect. In the early eighties the discovery of natural gas in Ohio and in a few counties in Indiana led to a considerable amount of speculation as to the possibility of finding it in merchantable quantities. "This flow" says the Mine Inspector, "has been utilized for concentrating brine, and is of great economic value for driving engines, burning lime, crockery etc., as well as for illuminating and culinary purposes. It invites and deserves attention." (7)

(7) Report of the Mine Inspector of Indiana, 1882, p. 24.

It soon received such attention from the Department of Geology. "The probability is very great" wrote the State Geologist,

"that throughout a large area in the northern part of the State, both gas and oil may be reached, and the definite outlining of such an area, will be a work of immense value to the commonwealth. The discoveries already made in several counties, show that the deposits of natural gas are not limited to special reservoirs along any given line, and that they are not due to strictly local agencies." Then, almost with the excitement of a newspaper "extra" the report breaks off: "Natural gas discovered! Since the foregoing report was made ready, and a part of it published in the Indiana papers, --- --- natural gas has been reached at several points in northern Indiana in Delaware and Howard Counties." (8)

(8) Fifteenth Report of the Department of Geology and Natural History 1885-6, p. 7.

In 1886 the Mine Inspector (at page 17 of his Report) remarks prophetically, "If a permanent gas supply can be found in Indiana, it will add much to the wealth of the State and materially injure the demand for coal". A report of 1888 (16th Annual Report of the Department of Geology) records that gas wells had been successfully sunk in every county in Indiana (p.191). "New wells," said the Geologist, "are brought in at the rate of nearly half a million dollars per month." In the same year that the Geologist made this report, the State Mine Inspector remarked that coal was being displaced by natural gas in Indianapolis and other cities, and by crude oil in Chicago. In 1893, though the State Geologist reported that the coal production had been the ^{largest so far, he admitted that it had not been} large enough, considering the capacity of the mines in Indiana. The reason is seen in that the natural gas wells were at the time, still producing enor-

mously enough, and still being wasted at the rate of five thousand dollars' worth a day. The production of petroleum, too, had become an important industry. (9)

(9) 2,335,000 bbls. of 42 gals. each, produced. At the beginning of the year, 1893, there had been 250 producing wells, at the end, there were more than a thousand.

No wonder that, in 1897, the Department of Geology and Natural Resources was forced to record that Indiana had been outdone in the competition with the coal industry of Ohio, Illinois and West Virginia. But the climax had been reached in the substitution of gas for coal, largely as the result of the unparalleled wastefulness that could not be efficiently curbed even by stringent legislation. In 1898, we begin to hear of the shortage of gas, causing a great demand for coal to be stored for winter use -- and now prophecy tends in the opposite direction. "There is no doubt but that the demand for Indiana coal will gradually increase as the demand for natural gas grows less, and the chances are that the output will reach 10,000,000 tons per annum before the year 1910." In 1900, the same prophecy was repeated more positively and in 1906, it was much more than realized. (10)

(10) See Report of the Department of Geology and Natural Resources for the respective years.

To sum up, then, mining in Indiana became an important industry in the seventies, and the first mining laws of the State were passed in 1879. It grew steadily in the eighties, and we shall see the laws received a great deal of attention in that decade. In the early nineties, the growth of the industry was arrested, and accordingly only the most easily ac-

possible veins were worked; the demands for legislation were therefore ignored, until just about the period when an unprecedented growth began to take place in the industry.

The experiences of the other two States in connection with the demand for coal were similar, except that in both Illinois and Ohio, the corresponding growth manifested itself earlier. The active competition with the forests disappeared in the first quarter of the century in Ohio, and in Illinois, where but few forests existed, within the first half of the century. Thriving manufacturing cities were put into communication, both by rail and water, with these coal fields at a very early day. Ohio mining felt the impetus to trade resulting from the application of steam tow-boats for conveying coal on the Ohio in the forties. The next two decades brought railroads into the heart of its mining region. (11)

(11) For effects of railway development on Ohio mining, see Annual Report of the Chief Inspector of Mines of Ohio, 1888 text. For the slight effect of the competition with natural gas in Ohio, see Ibid.

Illinois began at the same time to develop its fields in response to the growing demands of western cities and railroads. During all this time the Indiana coal fields were hampered in their competition with the well-developed industry of Ohio, and the wonderfully favored coal-lands of Illinois. As late as 1882 it was remarked of these lands: "Thus far in the history of coal mining in Illinois, the mineral has usually been taken where it could be found in conspicuous outcrop, or so near the surface as to be readily obtained, and such places have been so numerous, and geographically so near im-

portant markets, that it has been necessary only in a few localities, as yet, to make expensive prospects or deep tests for coal." (12)

(12) Coal Report of the Illinois Bureau of Labor Statistics, 1882, p. 6.

Mining naturally became the most important industry in Illinois in a very short time. And in the early seventies, when the mine-workers of Ohio took up their fight for legislation, the mine-workers of Illinois were already able to make similar demands from their legislature. Ever since that time the development of the industry in both States has been constant except for the fluctuations due to the panic of 1893. Although the progress of mining legislation has been rendered uneven in each of the States by other considerations, it has never been slackened for lack of activity in the coal trade nor hastened because of the presence of intensive mining in these States to the extent noticed in Indiana. In about 1881 Illinois passed Ohio in the production of coal and soon thereafter it began to lead the three States in ^{mining} legislation.

As the demand for coal grew in response to the new industries that were appearing throughout the country and the new uses for coal that crowded each other in the eighties and more particularly in the nineties, the slow method of pick mining gradually disappeared. (13)

(13) Two of the oldest miners in the Wellston, Ohio, district, favored me with an account of the early methods of mining in Ohio--Mr. Thomas Cole and Mr. Joseph Mathews, both then working at the Standard Shaft, in Jackson County.

As long ago as 1872, the method of "smashing" coal with powder,

known as "blowing off the solid," was becoming common in Ohio,

(14)

(14) Report of the Mining Commission, appointed under Joint Resolution of the General Assembly dated November 14, 1871, p. 10.

and it has continued to grow in popularity in all three States ever since. It is obvious that the dangers incident to this careless method are different from and greater than those of the pick-mining usual in the days when mine laws were first enacted. But a more important change has come over the methods of mining since those days owing to the introduction of mine machines. In Indiana, we find the first coal cutting machinery introduced in 1884, by the Connersville Coal Company, as an experiment induced by a strike. The experiment was successful and the Parko Coal Company followed. (15) Still,

(15) Mine Inspector's Report, 1884.

we find that as late as 1895 the advantages of machine mining were but little understood in Indiana. The first three machines in the Block district were introduced in that year, and the annual report of the Inspector stated that but twenty compressed-air and electric machines were in operation in the Bituminous districts. Two years later, the number had increased to one hundred and twenty-three. (16) In Illinois

(16) Annual Report of the Inspector of Mines, 1897.

the use of mining machinery was begun a year later than in Indiana in some of the larger collieries operated by the carrying companies. Ohio was even slower to introduce machinery, but in that state the development of its use was more rapid than in the other two States. The Inspector reported

in 1889 that in one mine in Perry County the first coal to be economically won by electricity in the United States was being mined. Two years later, the record says, the machine experience in Ohio, was disappointing. Five had been cast aside and only one added during the year making a total of twenty-one in the State. It was at this period that the miners, disgusted with the fragile machines, began to make great sport of their new rivals, vying with the machine-hands and maintaining that they could work faster with their picks. (17) Still

(17) Statement of Andrew Roy and others
as to the early difficulties of machine mining.

the Ohio Inspector was inclined to take them seriously. "It is manifest," said he, "no single type of machine ... will give satisfactory results in all classes of coal or in all the coal veins of the State, and the sooner the inventors and manufacturers realize this fact, the greater will be the advancement in this branch of the coal industry," (18) His report for

(18) Annual Report of the Chief Inspector
of Mines of the State of Ohio, 1891.

1893 contains an elaborate article on various coal cutting machines patented in the United States from and after 1858. The article concludes with the hope that machine mining will mean a great decrease in casualties. The experience of Hocking County is cited, where seventy-three per cent. of the coal was already being mined by machinery and where but one fatal accident had been recorded; in fact, no accidents had been recorded up to that time that were attributable directly to machinery. This hope, however, failed to take due notice of

the fact that the men selected and the precautions taken by the employer to protect his fifteen hundred dollar machine made it impossible to give a fair test of the dangers of machine-mining at that date. Since that time machine mines have become so nearly universal and the application of electricity to mining so common that new dangers unsuspected at first, have appeared and given rise to new precautionary measures, at least to demands for new legislation. (19)

(19) Thus the percent. of Ohio coal mined by machinery according to the Inspector's reports, has risen gradually from 9% in 1890 to 76.1% in 1906. For present condition of coal cutting machinery, see Census report cited above, pp. 325 - 327.

Equally great changes involving equally great new dangers have taken place simultaneously in the other departments of mining, for example, in hauling coal. In the early days of mining in England, it is said, women were frequently hitched to the "corves" or baskets which they "hurried" to the bottom of the shaft. In America, dogs, mules, ponies, chain-systems and electric motors have successively performed this function. When the Ohio Commission made its investigation of the condition of the mines in 1871, massive dogs hitched in front of the cars were still employed to do the hauling in some of the mines. It is said that the miners valued their obedient and useful subterranean comrades highly. The dogs seem long since to have disappeared from the mines and are now nowhere to be found excepting perhaps in McDonough County, Illinois, in the thin veins where the cost of making road-ways for mules or ponies would render mining unprofitable. The commonest system of hauling to this day, is by means of mules, and various provisions will be

found in the mining laws regarding their presence in the mines.

(20)

(20) In coal-mining, an underground way over which the coal is conveyed by means of an endless chain or rope worked by an engine. Cent. Dict.

"Engino-planet"⁽²⁰⁾ and electric "mules", however, are rapidly displacing all other means of haulage, and wherever they have appeared, dragging long trains of cars, at a high speed, new problems have begun to face the mine-worker. In fine, as progress is made in the various departments of mine-working, there are presented new dangers that call for new applications of the new principle of social regulation of mining.

B. The Social History of the Miners.

In 1906 there were 46,500 persons employed in and around the mines of Ohio; 19,562 in Indiana; and 52,233 in Illinois: A notion of how rapidly these numbers have grown from small beginnings may be gleaned from the fact that the numbers in Illinois and Ohio doubled in the fifteen years preceding 1906; the number in Indiana trebled in about the same time.

Forty years ago most of the miners were Americans, Englishmen and Scotchmen, who had served in the mines from their ninth or tenth year. Today only about one-half are Americans and the foreign element is chiefly made up from non-English-speaking people. A fair idea of their nativity may be gathered from an elaborate study recently made by the Illinois Bureau of Labor Statistics. Of some nine thousand miners examined, 56.21 percent. were native born, and of the rest

Austrians, Belgians, Greeks, Hungarians, Italians, Poles, and Russians made up a little less than half, while Englishmen, Frenchmen, Germans, Irishmen, Scotchmen, Swedes and Welshmen made up the other half. (21)

(21) Thirteenth Biennial Report of the Bureau of Labor Statistics of the State of Illinois, 1904, pp. 155-165.

Negroes, mostly imported as strike-breakers, have been employed in mines in these States with varying degrees of success; in one county in Illinois it appears, a good many had found permanent employment at one time. (22)

(22) Perry County, in the early eighties. see Rept. Ill. Bu^l.St., 1882.

Very few of these miners are skilled workmen of the type that used to take great pride in their ability to "trim" their coal before knocking it out. A system of "coal butchering" as the older miners say, has displaced the "art of mining".

"Any man that can carry in a keg of powder and drill and smash out coal, can now get pay equal to that of the skilled miner," lamented one of the leading mining engineers of Illinois last year. (23) The displacement of skilled labor by unskilled

(23) Hon. Richard Newsom, chairman and engineer of the State Mining Board of Illinois. See also Report of the Chief Inspector of Mines to the Governor of the State of Ohio for 1906 P. 33, and the Introduction to the Annual Coal Report of the Illinois Bureau of Labor Statistics for 1906, both quoted below. p. 175 & 293.

labor in the mines is today the most fruitful source of the difficulties that lead to the need of more mining laws.

The standard of living of the mine-workers is, of course, even more varied than their nativity. Nevertheless as the mining laws aim primarily at establishing proper conditions

for work rather than any definite standard of living, we can dismiss this subject with a statement taken from the Ohio Commission's Report of 1871, which, with reasonable allowances for lean and fat years, we may assume as true in this discussion: "The miners all admitted in one way or another that in this respect, ~~twages~~ they had no complaint to make. They confessed that they made a good living for themselves and their families and said that they would be satisfied if the ventilation were better and if there were greater safety in ingress and egress." (24) Although it is not true that the average

(24) I received the same testimony from miners in Jackson County, Ohio, last summer a few days before several hundred of them went out on a strike. Mr. R. F. Butler, an engineer in one mine I visited, Superior No 8, seemed to express the generally current feeling when he said, "Miners are much better paid than almost any other laborers."

earnings of miners having families exceed the cost of maintaining those families in periods of depression and decline,

(25) it is true that the demand for more wholesome and safer

(25) Such a period was 1885 in Illinois because of the competition of Pennsylvania, Ohio and Indiana partly caused by the introduction of natural gas in those States. The report of that year of the Bureau of Labor Statistics, shows the average earnings of a mining family to be \$585 as compared with the average cost of maintaining a family of five estimated at \$435.

Working conditions is his most constant cry. Miners' phthisis, asthma and other diseases resulting from the unsanitary conditions of the subterranean workshop and the miner's characteristic sunken cheek, stooped head, hollow chest and shambling frame, resulting from the nature of his work, call for as much improvement in those conditions, as the law can possibly give.

It is a common-place among miners, that bad ventilation leads to bad humor, and that if you would avoid strikes among them, you should give them plenty of good air and reasonable assurance that ^{their} ~~his~~ working places ^{are} ~~is~~ safe.

It has often been said that miners are not satisfied to remain long in any one place. This notion was more nearly true in the days prior to the enactment of mining laws and the establishment of miners' union than it is today. In fact, up to the Civil War, the miners' occupation was in an utterly unsettled state, and naturally hundreds of mineworkers enlisted when that war broke out. After they returned, many of them settled down, possibly because of the brisk condition of the trade, and it was then that the first successful agitations began among them, looking to the improvement of their working conditions. (26) As long as trade had been in the po-

(26) Andrew Roy: A History of the Coal
Miners of the United States. Columbus
1906. p. 63 ff.

culiar, youthful state that permitted every miner to expect to be a mine-owner within a few years, no such settling down, no such class-consciousness as that displayed in this agitation could have been imagined. Its existence shortly after the war, however, was witnessed by the continuous efforts to organize unions among the miners of these States, culminating after many failures, in the establishment of the greatest trade-union in existence. Perhaps one reason why such a consciousness appeared among miners so early is the fact that a miner of a regular mining family, is supposed to adhere to his vocation.

The miner's position, in the industry as it is carried on today, is a peculiar combination of that of laborer and that



of independent contractor. He is a contractor, for he furnished his own oil and powder and some of his instruments; he has a certain place assigned to him, in which he may, and frequently does, hire assistants for carpenter-work, loading, picking out slate, and the like. Under certain conditions he even pays a shot-firer for firing his shot. In such cases, his work in the mine is limited to preparing the coal, or undercutting, and preparing his "shot" by drilling a hole and filling it with an explosive. In practice he himself usually does most of the work in his "room". He may even be hired by the operator as a common laborer. (27) The operator or party in

(27) See Ohio Mining Commission's Report, P. 67.

control of a mine, is either the owner or, more frequently, the lessee of the plant. The system of limited leasing leads of course to a tendency to get out as much coal as possible in the shortest time, regardless of future consequences and, as a miner put it, regardless of "every element that enters into the laws of good mining and the preservation of the health and safety of those engaged in and about the mines". The plan of leasing for a short term of years was already growing in popularity among operators twenty years ago. (28) The operator

(28) See Rept. ... Mines, Ohio, 1868.

is usually represented at the mine by an officer known as the mine superintendent, or a manager delegated for the purpose, who has charge of the premises, of the contracting for the services of miners, and of the furnishing of such supplies as the operator is responsible for (that is, he is a vice-principal). The law gives the operator certain privileges and

obligations aside from those expressed in the lease, on the one hand, and in the contract of service, on the other. It throws safe-guards around the mine-workers, assigns to them special rights and duties, creates or, at least, recognizes certain mine officials, whose work, qualifications and responsibilities will be considered in discussing the law.

The conditions that have made miners the special wards of the State and that have led to the exercise of the police powers of the State in other respects in connection with mine operations, have been simply the dangerous and hidden character of the occupation. A summary of the dangers by a practical miner is found in the Ohio Commission's Report of 1871. It applies with equal force to Indiana and Illinois. "All underground mining is dangerous," read the minority report. "The dangers to which the miners of Ohio are exposed, and over which they have no control, are occasioned by defective ropes, defective hoisting engines, uncovered cages and cages lacking approved safety - catches; want of proper means of ingress and egress to the main opening in case of accident; narrowness of slopes, drifts and gangways, so that there is no room to get out of the way of cars in motion; inundations of water, breaking through at abandoned workings; inhalation of poisonous, noxious gases, owing to imperfect ventilation, and [by] explosive fire-damp. There are also a number of other dangers to which they are liable, such as falls of coal and slate from the roof, breathing coal-dust, which is always held in mechanical suspension in the air under all degrees of ventilation; premature explosions of gun-powder, in blasting out the coal,

roof or pavement etc., which they themselves must guard against. The great and crying danger, however, is 'bad air'." (29)

(29) P. 80.

Add to these dangers, those arising from the use of machinery, and the extra coal dust and noises incident thereto; from motors speeding along narrow inclined roads; from electric wires; the modern indiscriminate use of explosives; the defilement of air by bad oil; and the general carelessness or stupidity on the part of fellow-workmen: and you have most of the conditions that give rise to the need of mining legislation. As the workings progress and become deeper and more extensive and the goaves or worked-out portions become larger, and abandoned workings, where gas or water may accumulate, more numerous; as less and less accessible veins are chosen to be worked; as more men are crowded together in a pit, these dangers necessarily increase.

On the other hand certain forces have been constantly at work improving the conditions of the miners and decreasing the dangers of their work. These are, the general progress of the industry, the organized efforts of the men themselves, and social intervention.

As coal mining has advanced, methods of obviating its difficulties have improved. With modern fans it is possible to ventilate mines today that could never have been supplied with air a generation ago. With modern safety-lamps gas can be accurately measured when it exists in quantities too small to be detected by the old Clanny and Davy lamps. Modern hoisting machinery and safety appliances are better than the

best that could have been bought for any money thirty years ago. The self-interest of employers alone would eventually lead to the introduction of these improvements both because they contribute to the safety of property and reduce insurance rates and because the better the working conditions, the more efficient the men.

Working more directly towards the same end have been the organized efforts of the mine-workers in their unions, through their joint-conferences with employers. The objects of these efforts have not been limited to raising wages and decreasing hours. Among the objects stated in the preamble to the constitution of the United Mine Workers of America are many bearing directly or indirectly on subjects dealt with in the mining laws: weekly payment in lawful money and the abolition of company stores; honest weighing; the use of safety appliances, the securing and enforcing of legislation or ventilation and drainage timber supplies, to regulate child labor and to promote industrial peace. (30) Other things dealt with in the

(30) From the Preamble to the Constitution of the United Mine workers of America:

"Second: To establish as speedily as possible, and forever, our right to receive pay for labor performed, in lawful money, and to rid ourselves of the iniquitous system of spending our money wherever our employers see fit to designate.

"Third: To secure the introduction of any and all well-defined and established appliances for the preservation of life, health and limbs of all mine employees.

"Fourth: To reduce to the lowest possible minimum the awful catastrophes which have been sweeping our fellow-craftsmen to untimely graves by the thousands; by securing legislation looking to the most perfect system of ventilation, drainage, etc.

"Fifth: To enforce existing laws; and where none exist, enact and enforce them; calling for a plentiful supply of suitable timber for supporting the roof, pillars, etc., and to have all working places rendered as free from water and impure air and poisonous gases as possible.

"Seventh: To provide for the education of our children by lawfully prohibiting their employment until they have attained a reasonably satisfactory education, and in every case until they have attained fourteen years of age.

"Eight: To abrogate all laws which enable coal operators to cheat the miners, and to substitute laws which shall enable the miner, under the protection and majesty of the state, to have his coal properly weighed or measured, as the case may be.

"Ninth: To secure, by legislation, weekly payments in lawful money.

"Eleventh: To use all honorable means to maintain peace between ourselves and employers; adjusting all differences, so far as possible, by arbitration and conciliation, that strikes may become unnecessary."

laws concurrently provided for through organized bargaining are the general responsibility of operators to keep working places in fit condition, provision in case of accidents, screening rules, shotfiring and the employment of certificated men. (31)

(31) See e. g. Wage Agreement of the Illinois Operators' Association and the United Mine Workers of Illinois of May 9, 1908, in the United Mine-Workers' Journal, vol. XIX. No. 1.

To improve the importance of the organized efforts of mine-workers to improve their conditions, it is necessary to recall that of the one hundred and thirty-five thousand men employed in and about the mines of Ohio, Indiana and Illinois in 1907,

over one hundred and ten thousand (110,226) were, according to the official record of the United Mineworkers, members of the union in good standing. Practically all of the miners of the Central Compotitive District--Ohio, Indiana, Illinois and Western Pennsylvania are working today under conditions controlled by the agreements of the United Mineworkers of America and the organized operators of the several States.

Our special study is limited, however, to social intervention for the purpose of ameliorating the conditions described above, or rather to one form of social intervention, namely, social legislation. The common law had much to say regarding the obligations of the employer to furnish reasonably safe conditions of labor; it set metes and bounds to the property rights of the land-owner and lessee of mining interests; it discussed the rights of other land-owners to subjacent and lateral support, to water percolating or flowing beneath the surface as the case may have been, and it implied no doubt some remedy for most of the evils enumerated above. Nevertheless direct legislation was found necessary to define and modify the common law rights and duties, to simplify the means of their enforcement and to create criminal as well as civil liability, for their violation. The impulse that gave rise to this form of intervention by society in these States, was, as usual, a manifestation of the possible evil results of the conditions, in aggravated form. Mine disasters and mining laws have appeared together with sufficient regularity to warrant the argument, "Post hoc, ergo propter hoc." In Great Britain the first movement looking to parliamentary supervision of

of mines occurred in the year 1812, in consequence of a dreadful accident by an explosion of fire-damp at the Felling Colliery. The first actual legislation granted was immediately preceded by a series of disastrous explosions of fire-damp; and it was not until after two hundred and five miners had lost their lives in the Hartley Colliery that public opinion in England had reached the point where efficient mining legislation could be expected. (32) In the series of state-laws

(32) Andrew Roy: History of the Coal Miners of the United States. pp. 24-38.

about to be examined, the Avondale disaster in Pennsylvania, 1869, and the Braidwood disaster in Illinois, 1883, played similar roles. Lastly, a series of unusual accidents that occurred in close succession in the month of December of last year, turned the attention of the Federal Government to an investigation of the causes of explosions in mines. It was pointed out that for every one miner who lost his life in the mines of England, France and Belgium, three were sacrificed in the United States in proportion to the total number employed. Of course, the Federal Government will limit its activity in the States to investigation. The actual remedial measures will be left entirely to these States to be worked out under systems of mining laws similar to those to which we shall now turn our attention.

CHAPTER I.

The General History of the Laws.

Part 1:

The Purposes of the Laws and their Enactment.

A. The Purposes of the Laws.

The dangers of mine-work, the fact of its being hidden from the public view, and the degree to which mine workers, as a class, are placed "at the mercy of incompetence, indifference and cupidity on the part of others" are the three facts that have set aside mining operations as a subject for special legislation and have made the miner the ward of the State. (1) It is an exercise of police power--the almost

(1) Report of the Illinois Bureau of Labor Statistics, 1885, p. XLX. *See supra p. 107*

unlimited power vested in the legislature to make such laws as they shall judge to be for the good of the commonwealth and its subjects (2) -- that makes many of the mining laws possible, except in Illinois where the Constitution vests such

(2) 7 Cush. 874, 1 Thay. Const. L. 720.

power in the legislature in so many words:

"It shall be the duty of the General Assembly to pass such laws as may be necessary for the protection of operative miners, by providing for ventilation, when the same may be required, and the construction of escapment shafts, or such other appliances as may secure safety in all coal mines, and to provide for the enforcement of said laws by such penalties and punishments as may be deemed proper." (Article 4, § 29)

In all three of the States many of the sections have been

tested as to their constitutionality, and a few, as we shall see when we come to them, have been declared unconstitutional. The exact character of these laws and the constitutional questions that would be raised were clearly understood by the Ohio Mining Commission in 1871. (3)

(3) Report of the Mining Commission.....
of the State of Ohio, 1871, p. 30

The majority of that Commission opposed mining laws for that very reason, and to satisfy the crying need for legislation of some kind, they proposed general bills applying equally to all industries. The distinctive features of mining, however, led to the rejection of this plan, first in Ohio, and then in the other States where it has been frequently suggested by operators. This same Commission found many other grounds for opposing what was then a new departure in legislation. They mentioned the one-sidedness of the miners' bill; they opposed it on the ground that it provided for State sanitary police side by side with municipal sanitary police; they considered its exemptions of mines employing less than a certain number and other provisions which they did not specify "minutiae beneath the notice of the law". Lastly, they argued specifically that the expense of mine inspection was one connected with the production of coal and that Ohio should not be called upon to pay for any part of the production of an article that would probably be used in another State or country. They attempted to distinguish between the condition in European countries that had passed mining laws and the condition in the younger American States, on the ground that it was questionable whether the latter States owned the dominium, or ultimate

title to the mines. (4) But whatever those technicalities

(4) Ibid, p. 28, 29, 32.

may have had, aside from the Commission's personal feelings, they have been ignored by one State after another. The constitutionality of exercising the police power of the State in relation to mining has recently been upheld by the Supreme Court of the United States. (5)

(5) Wilmington Star Mining Co. v. Fulton, 27 U. S. Sup. Ct. Rep. 412.

The primary aim of the mining laws is to decrease the danger of mining by increasing the carefulness of employees and defining and enforcing the obligations of employers. This aim has been even more concretely and perhaps more accurately stated by an Ohio Inspector: "The initial province of the Department is to throw all known safe-guards around those who find employment in our mines, thereby preventing as far as possible the repeated occurrences of the accidents so common in this industry." (6)

(6) Annual Report of the Chief Inspector of Mines of Ohio, 1889.

Various secondary aims connected with the decreasing of dangers in mines in subject matter only or for administrative reasons have been foisted on the mining departments from time to time in all of the States. In Indiana there has always been a strong tendency to emphasize in mining laws the resource-developing side, as may be seen today in the organization of the Department of Mining as a branch of the Department of Geology and Natural Resources. Even before the union of the departments -- which resulted indeed from a mere political

accident -- a misconception of the fundamental end of the mining law was remarkably expressed by an Inspector in his letter of transmittal: "And now," says he, "[I] give the result of my labors in the hope that it will help to increase the knowledge of, and interest in the development of the great wealth and power that lies hidden in the coal fields of Indiana."

(7) This is a very laudable purpose, no doubt, but we can

(7) Report of the Mine Inspector of
Indiana, 1888.

readily see why the miners were dissatisfied with their inspector in that year. Illinois, on the other hand, has tended to ally its Department very closely with the Bureau of Labor Statistics, and to convert its inspecting force into gatherers of useful information. The inspectors hand their reports to the Secretary of this Bureau. He edits them in a uniform manner determined by the Labor Commissioners and not by any chief of a mining bureau, for they have none. In Ohio an attempt was made in 1877 to make use of the inspector, not only as a statistician, but also as an arbitrator of labor disputes. (8)

(8) Annual Report of the Chief Inspector
of Mines of Ohio, 1877, page 165.

Andrew Roy, who was the Inspector at the time, understood the mining law that he himself had written, too well to permit the changes to be made. "The mining law", said he, "was enacted for the sole purpose of protecting the lives and safety of miners; and in attending to his legitimate duty the Mine Inspector has all the work that he can do and more..... The experience of other nations and of other States of this nation shows that it is neither wise, nor expedient, nor possible, to

combine the duties of the Mine Inspector with those of other State officials and make the mining law of any practical benefit to the party for whose protection the law was enacted. The Mine Inspector must be an expert; he must be free and untrammelled in his action by other State officers who know nothing of mines, their dangers, and means of safety." On the other hand, the true functions of an Inspector, and the workings if not the purpose of the law, were at first generally misunderstood by the mine-workers themselves. The Ohio Commission insinuated that in Pennsylvania, the Inspectors were more "agents of the miners' union, for which the Governor goes through the form of ~~granting~~ a commission." (p. 38) Roy himself admits that in the early days he had great difficulty in making the miners understand that he was an officer of the State and not merely an agent representing one side of a perpetual controversy.

Other objects of the law, or rather other uses found for the law, have grown not so much out of a misconception of its fundamental object as from the economy sometimes practiced by legislatures, or possibly from the conviction that "the coal business must be looked at as an entirety." (9) Thus

(9) Ohio Commission's Report, p. 23. This commission wanted to insert provisions for municipal coal warehouses to prevent coal famines.

the Mine Inspector becomes a sealer of weights and measures, a coroner, and even a consulting mining engineer under certain conditions. Sections of the law, treating of the rights of miners to know how much coal they deserve to be paid for, add a few words to make the provision apply also to lessors entitled to royalty. And so we find the law grows and extends

itself to the interests of others than the mine-workers -- the landlord, the operator, the adjoining property owners, the State. They, too, are affected by the peculiarities of mining operations and the fact that they are hidden from view; they, too, have rights that justify the exercise of police power. Why not, they said, embrace them all in one act?

The specific clauses of the mining laws can readily be grouped around their various objects. There are of course the merely definitive and accessory clauses and administrative provisions, a minuter classification of which can be best understood after the subjects of the main clauses are enumerated. These main clauses may be divided into three general classes: those protective of the interests of mine workers; those protective of property interests; and those protective of the interests of the public.

The clauses protective of the mine-workers' interests take up, in the first place, their contractual relations. They provide as to the time and manner of paying miners, and create means of enforcing claims for work done in the mines. They provide for fairness in weighing, or measuring coal, where miners are paid by weight or by measure; inspection of scales, regulation of screens and screening and the right to place a check-weighman on the tippie are included here. But the chief function of the clauses protective of the interests of the mine-worker is the prevention or removal of dangers to life, limb and health through proper ventilation, safe machinery and working places, proper means of ingress and egress and communication, special precautionary rules of conduct and mis-

cellaneous requirements for the comfort of the men. Ventilation includes the creation of a sufficient air supply, proper arrangements for its distribution (through splittings, break-throughs, air-bridges and over-casts with ample stoppings and ventilating doors to prevent leakage), proper precautions to prevent the defilement of the air (dealing with stables, miners' oil and keeping bore-holes in advance of workmen) and precautions to prevent danger of explosions (such as sprinkling where dusty, safety-lamps in mines, generating fire-damp and regular inspection by fire-bosses). The safety of machinery and working places is provided for by regulating hoisting machinery (in which chains or ropes, cage-coverings, fences, safety-catches, indicators and gauges and other safety appliances must be looked to), timbering and the marking off of pillars and steam-boilers and electric appliances where these have found their way into the mines. The legally required means of ingress and egress and communication include second outlets, proper equipment for escapment shafts, safe and ample passageways, effective illumination, and signaling apparatus. The special precautionary rules of conduct referred to include both regular duties of mine-workers and special measures to be observed in storing and handling explosives and in firing shots. The miscellaneous obligations imposed on operators for the comfort of the men include providing wash-house facilities and stretchers and materials for bandaging the injured.

The clauses protective of property interests affect, among others the landlord, who is given rights to be shown mine maps or have them made, in some cases to appoint check-

weighmen, and even to claim a special lien for royalty similar to that of the mine-workers. The operator may make openings for drainage, may enjoy the right of way on adjoining lands and may require special duties of his employees imposed as disciplinary measures. Adjoining property owners, too, are given some consideration in the mining laws: they are protected against underground trespassing by special criminal statutes, by clauses granting a right of access to mines for the purpose of examination and by sections limiting operators' rights of working their coal within certain distances of neighboring lands.

The clauses protective of the interests of the public aim at the preservation and development of the natural resources of the State by improving mining methods or by gathering and disseminating helpful information; at the promotion of industrial peace, and at the prevention of female labor and the regulation of child labor.

For the administration of these laws, provision is made, both through the machinery of the state and through the officials of the mines. Special officials have been created known as inspectors; mine departments have been organized and state boards provided for; and existing officers have been given special powers and duties in connection with the law. Regular inspection and reports, inquests in case of fatal accidents, procedure in the courts, examinations and conferring of certificates of competency or service and the posting of notices in the mines have been authorized. Penalties and damages in civil suits in case of violation have been meted out and considerable discretionary power extending even to the peremptory closing

of mines, vested in executive officers. Gradually appropriations by the States have become large enough to make it actually possible to enforce most of the provisions. A considerable part of the administration of the law still depends upon the mine officials, upon whom new duties and liabilities are frequently imposed. Thus they are supposed to make regular inspections for gases, measure the air supply, report periodically and on certain occasions to the state officials and supply maps, affidavits and other documents to the mine inspector. Lastly, by means of special rules of discipline posted in the mines, an attempt is made to reach the mine-workers themselves and place the execution of the law in the hands of those for whose benefit it was primarily enacted.

B. The Demand for the Laws and their Enactment.

There were no mining laws in any of the United States before the year 1869. For several years before that time the miners of Schuylkill County, Pennsylvania, had carried on a vigorous agitation, that resulted ultimately in the organization of the Working Men's Benevolent Association, (W. B. A.), in the serious consideration of a mining law by the lower House of the Pennsylvania Legislature in 1866 and finally in passing a law for Schuylkill County, providing for a Mine Inspector for that county to be appointed by the Governor. The act was approved by Governor Goary on the 12th of April, 1869, and an inside foreman, named John Eltringham, was appointed the first Mine Inspector in the United States. All efforts to extend this legislation to the other counties of the State or even to

the Anthracite District were defeated on the grounds that the miners did not demand any such laws. (10)

(10) Thos. K. Adams in Mines and Minerals July 1907. Andrew Roy in the United Mine-workers Journal, May 30, 1907, p. 1. Also in Ohio Com-missions' Report pp. 89 - 91 and in The Coal Mines, Cleveland, O. 1876, p. 180 et seq.

On the morning of the 6th of September 1869, one hundred and ten men and boys employed at the Avondale Shaft in Luzerne County, Pennsylvania returned after a long strike. At about nine o'clock the brattice-work in the only opening of the mine was discovered on fire, and before anything could be done to save those at work in the mine, the fire had gotten beyond control, and everybody in the mine had perished. This disaster aroused public opinion in favor of mine legislation in every coal mining State in the country. Not only did Pennsylvania approve a "ventilation bill," (March 3, 1870) for the Anthracite District, but numerous bills were entertained regarding Bituminous counties as well. Within a year Andrew Roy, who with his brother had been instrumental in bringing up a bill for Mercer County, Pennsylvania, was actively engaged in encouraging the miners of Ohio to demand similar legislation. Walter Rutledge and John Hinchcliffe were doing the same in Illinois. (11)

(11) The Avondale disaster and the interest in mining laws stirred up by it have been described by Roy in numerous articles and in the books cited above. Mr. Thomas L. Lewis, of Bridgeport, Ohio, whose father was present and helped in the work of rescue also described them to me and referred me to current newspaper accounts giving dates, etc.

Roy had brought himself and the subject of mining laws before the miners of Ohio, among whom he now lived, in a series

of letters written in Scotch dialect, signed "Jock Pittbrecks," in "The Miners' Journal", the official organ of the miners of the Mahoning Valley, published by Alonzo D. Fassot (now editor of the Toledo Critic). Towards the end of 1870 a series of resolutions drawn up by Roy was unanimously adopted at the district convention of the Mahoning Valley miners, asking the General Assembly of Ohio to enact a law for the regulation and inspection of the coal mines of the State. A committee of three was appointed to prepare a bill on the subject: One William Thompson, who had, several years earlier, been sent to lobby a bill through the British Parliament; David Owens, later a mine inspector of Ohio; and Andrew Roy, the instigator of the movement. At a special convention of miners held in January 1871 to consider the bill, it was presented and approved as read. John B. Lewis of Mineral Ridge, the district president of the union, and Andrew Roy were sent to Columbus, armed with a monster petition, signed by every miner in the Mahoning Valley to see the bill through the legislature. Senator Woodworth, of Mahoning County, agreed to introduce it. (12) A special committee of the Senate was ap-

(12) Andrew Roy: Recollections of a Mine Inspector, 3, in United Mine-Workers' Journal Vol. XVIII, No. 5.

pointed to examine the bill. At their suggestion, the number of inspectors asked for was changed from four to two, and Senator Daugherty, assisted by Mr. Roy, reframed the bill. When the operators of the Mahoning Valley, who had regarded the whole movement as a huge farce, saw that there was danger of the bill being passed, they telegraphed the Senato

committee to defer further action until a committee of operators could be heard. Then began a most energetic lobbying, in the course of which legal talent was called in to prove the bill unconstitutional, scientific authority was called in to show it unnecessary, and important business men to demonstrate its ruinous effect on the mining interests of the State. And against all this array, two miners, who told simply what they knew of their daily life, won over the Senate committee--with the exception of one member, who had an interest in a coal mine. Numerous petitions and letters, including an address by a mass convention of all the miners in the Mahoning district, to the legislature were of wonderful assistance to the miners' committee. (13) At length a compromise was ef-

(13) Ibid. Nos. 4-5-6-7-8, Vol. XVIII,
6, 7, 8, 9, 10.

ected and Senator Woodworth was requested to introduce a joint resolution in the Senate, authorizing and directing the Governor to appoint three competent persons "to visit the various leading coal mines of the state and inspect their condition and manner of working the same as to ventilation, means of ingress and egress and also as to all other matters affecting the health and safety of all persons employed therein and to report to the Governor for the use of the next General Assembly, the facts in the premises, together with any recommendation as to legislation upon the subject, which the facts in their judgment may demand, to protect the lives and health of the miners."

When this resolution was voted on, the result was a tie, but the Lieutenant-Governor voted for it, and it was sent to

the House. Here two amendments were offered: "That at least one of the three persons to be appointed should be a practical miner", and that to the duty of the commission be added "to inquire into the causes of strikes among the miners of the states, and report the facts and their conclusions in the premises, and what legislation, if any, is necessary to prevent the same." The resolution as amended, passed the House, and the Senate adopted both amendments (May 2, 1871). Governor Rutherford B. Hayes appointed Charles Reomelin, of Cincinnati, to represent the operators, Andrew Roy, of Churchill, to represent the miners, and Benjamin M. Skinner of Pomerooy, a mine superintendent to balance the interests. Their report, which was transmitted to the General Assembly in a single copy given to the Senate on January 5th, 1872, contained "a general statement of facts observed in their inspection and through inquiries, questions of legislation, a detailed statement of the conditions of the mines by Andrew Roy with his minority report annexed the testimony taken, and miscellaneous matters." (14) The Report of the Commission proper,

(14) Report of the Mining Commission appointed under Joint Resolution of the General Assembly of the State of Ohio, Passed May 2nd, 1871, to his Excellency the Governor, Rutherford B. Hayes, Nov. 14th, 1871. Columbus 1872 (Mr. Roy has kindly lent me the only copy of this report that I have been able to find. N. T. I.)

drawn up by Mr. Reemelin, vigorously opposed the Daugherty bill, and suggested the substitution of three bills in which mining was put on the same basis as other industries in the matter of wholesome air, liability of employers for injuries inflicted on persons employed in industrial works or carried

in public conveyances, and county sanitary commissions, to be appointed by the Governor under certain conditions. Mr. Roy was quite unsparing in his criticism of these bills in his minority report and though not as prone as his colleagues to display learning, showed himself quite capable of defending the original bill that he had helped create. So far as the investigation of the causes of strikes is concerned, the Commission accomplished nothing. The majority report is filled with such statements as: "No strike ever secured to laborers anything which would not have come to them anyway by milder means"--"Labor and Capital are twins, drawing their nourishment from the same breasts," and "{Political parasites} taking advantage of the fogs of prejudice, point laborers to political agitation as a remedy for their troubles and strikes engendered by their maneuvers present the worst possible features." Mr. Roy very sensibly waves this part of the report aside. (15)

(15) Andrew Roy: Recollections of a Mine Inspector, 1-29, passim. (Note: This series includes a very interesting detailed account of the events narrated here but it needs careful checking with the official reports. Mr. Roy has dated almost every event mentioned in this part of the article a year too soon, as may be seen by consulting his own books and the official reports.)

In January, 1872, the Senate created a standing committee of Mines and Mining to which the report of the Mining Commission was referred. The minority report of Mr. Roy was adopted, and the Daugherty bill with a few alterations made by Mr. Roy was introduced into the Senate and unanimously carried. Then followed a desperate fight in the lower House, led

by two operators, who were members of the Committee on Geology, Mines and Mining, who finally presented a substitute bill that omitted the first eight sections of the Daugherty bill and all references to inspection. On the 23rd of May the Miners' bill and the substitute were read, section by section, and a discussion of several hours followed. The substitute was passed and sent to the Senate. There it did not receive a single vote and the Senate asked the House for a conference committee to consider the matter. There were at this time no miners in the General Assembly and the operators would not give in. The best thing for the miners to do was to accept the worthless substitute, which one of them compared to "a train of cars on a dead level without a locomotive or any other propelling force." It was at least, an "entering wedge" for future legislation.

Within less than three months after this virtual defeat of the Miners' bill, an accident occurred at the home of the author of the substitute bill in which one half the men in a small mine met their death by suffocation, resulting from fire in the only opening of the mine. The accident turned public sentiment at once in favor of the original miners' bill. Governor Noyes, in his next annual message to the legislature, called attention to the imperfection of the law in the following paragraph:

"A law was enacted at your last session intended for the protection of miners, which among other things, provides that there shall be two openings for every mine, whenever

30,000 sq. yds. of coal shall have been cut. It is thought that experience has demonstrated the necessity for two openings long before the excavation of 30,000 yds. And even if the law should remain as it now is in all other respects, it would be well to provide for authorized official inspection; otherwise the law will be, for the most part, in-operative. An intelligent, practical miner very truthfully says: 'Underground operations are far removed from the reach of public vigilance and investigation. Subterranean dangers are perpetually occurring and various, requiring frequent inspection by well-informed, practical and scientific men. Every mining nation on the globe has found it necessary in the development of subterranean treasures, to provide official supervision in the interests of the underground people.'

(16)

(16) The last part of the paragraph was quoted by the Governor from a letter sent him by Andrew Roy at a time, when, as he says, he thought the Governor would be turning in his mind the subjects of his annual message.

At this session the inspection bill was again introduced by Mr. Sterling, a banker, whose private business caused him to be absent a great deal and it was again defeated. At this time a State Convention, elected by the people to amend the State Constitution, was in session in Cincinnati. The miners' Committee had been in communication with several of its most prominent members with a view to amending the Constitution so as to help the cause of mining laws. On the 29th of May, Mr. Jackson of Perry County, offered the following amendment: "It shall be the duty of the General Assembly to

pass such laws as may be necessary for the protection of operative miners by providing for ventilation when the same may be required and the construction of escapement shafts, or drifts or such other arrangements as may secure safety in all coal mines, and to provide for their enforcement by such penalties and punishment as may be deemed proper." The strong advocacy that this proposition found affected the next legislature to such a degree that in 1874 the miners' Committee had but to choose between two amended forms of the old Daugherty Bill. Andrew Roy, though a Republican, was appointed by the Democratic Governor, Inspector of Mines, in spite of the strong opposition of the operators whose enmity he had incurred. (17)

(17) Andrew Roy: Recollections of a Mine Inspector, Nos. 15-20 in U. M.-W. Journal, Vol. XVIII. Nos. 17-22.

Since that time, mining bills have been introduced at nearly every session of the General Assembly. Amendments and supplementary acts were passed in 1881, 1883, 1884, 1886, 1888, 1889, 1891, 1892, 1894, 1898 and at every session thereafter. (18) Most of these amendments bear on individual

(18) Up to 1894, the Ohio Legislature met annually, thereafter bi-ennially. In recent years a great many bills on the subject of mining have been killed in the Senate. (Ohio Rep. 1900, p. 9)

sections and can best be discussed in connection with the history of the provisions of those sections. The Ohio law, as a whole, has never gone through any very radical revision. A few additional inspectors have been added from time to time; the oil law was framed in 1892; in the same year the law

was made to apply equally to all mines, both large and small; weighing-laws were passed in 1898; provisions for maps showing borings on coal lands and for the casing and sealing of wells were made in 1902; penalties were changed from time to time and made more severe, and appropriations made more nearly adequate: but the law as it reads today on the statute books (19) is essentially an amended form of the first seventeen

(19) Sections 290 to 300 inclusive,
4373 to 4379 inclusive, 202, 6871,
3184a (6881, 6925, 7070, 4443 to 4446,
8435 to 8437).

sections of the act signed by the Governor on March 21, 1874. The present Chief Inspector has been advocating the appointment of a Commission for some time "of which the parties interested will constitute a part and have full and equal representation for the purpose of drawing up and presenting to the General Assembly such measures as are deemed necessary to meet the changed conditions of mining and more adequately safeguard life and property." On May 9, 1908, the General Assembly passed an act "to provide for the creation of {such} a commission to recommend such changes in the laws as {might} be necessary or advisable for the regulation of coal mines in the State of Ohio, and for the protection of the health and lives of operatives in such mines, and for an appropriation to pay the expenses thereof." The commission is to consist of "seven citizens of the State of Ohio, three of whom shall be agreeable to the first six appointed. (20)

(20) {"The members of the Commission have not yet been appointed." Letter from Chief Inspector Harrison dated June 17, 1908. }

The early agitation for mining laws in Illinois was in

many ways parallel to that of Ohio. (21) It, too, was started

(21) For the account of the early agitations I am indebted to Mr. Walton Rutledge of Alton, Ill., whose connection with the events is sufficiently shown in the text. Also: the Report of the Illinois Bureau of Labor Statistics for 1882 p. 389 ff;

Andrew Roy: History of the Coal Miners of the United States, p. 137 ff. and passim;

Report of Ohio Mining Commission 1871, pp. 89-

91. For the later developments in Illinois, I am indebted to Hon. David Ross, Secretary of the Illinois Bureau of Labor Statistics; W. D. Ryan, former Secretary - Treasurer of the United Mine Workers of Illinois; C. J. Dailoy, of the Miners' American Union Relief Society, who has been instrumental in carrying the Illinois law to Michigan; President J. W. Walker, Vice President-Frank Farrington and Organizer James Burns Jr., of the U. M. W. of Illinois, Richard Newsam, Chairman and Engineer of the State Mining Board and the other members of the same board who remained with me after one of their meetings to answer questions; all of the State Mine Inspectors of Illinois with whom I spent several days while they were assembled at Springfield to give their testimony regarding a mine disaster at the Zeigler mines, and lastly the international officials of the United Mine Workers of America. All these accounts, however, have been carefully checked with the official records.

immediately after the Avondale disaster in Luzerne County,

Pennsylvania. Here, too, the miners of one part of the

State, the Belleville district, in the south were well organized. They, too, had an official organ, the Weekly Miner.

Its editor, John Hincheliffe, who has been characterized as

"an intelligent man, a ready writer, a good business man, and

a devoted trade-unionist," was one of the leading champions

of the movement. In 1870 he was elected a member of the Con-

stitutional Convention of the State of Illinois, and two years

later was a member of the State Senate. He was ably seconded

in his efforts by Walton Rutledge, a practical English minor

who had entered the mines of the County of Durham at the age of fourteen. He it was who performed many of the services that Roy had performed in Ohio for his adopted State, Illinois. He framed a miners' bill based, like that of Roy, on the law of England.

The Illinois mine workers were not at first successful in procuring the legislation that they sought and like the Ohio miners at a later date they turned to a Constitutional Convention that was then in session. One of the first committees of this Constitutional Convention to be organized in 1870 was the committee on Mines and Mining. One of the first reports to be presented to that body of men was prepared by this Committee. A very full discussion of its merits took place on the 24th of January, 1870, and resulted in incorporating into the Constitution the section on mining legislation (Art. IV Sec. 29), charging the General Assembly with the duty of passing laws for the protection of miners. To realize the significance of this section, it is but necessary to reflect that up to that time there had been no labor laws in the State excepting the "La Salle Black Laws" of 1863, and these instead of protecting workmen, punished by fine and imprisonment "persons conspiring to influence employees either by threats or intimidation to cease work in any manufactory or coal mine in the State." These laws which had been rendered necessary by a series of strikes in the coal mines in and about the city of La Salle, remained on the statute books of the State as its only labor legislation until mining laws were passed, though they were for a long time practically a dead

letter.

Strengthened by the minors' clause in the new Constitution, Rutledge and Hinchcliffe proceeded to lobby for the miners' bill. In fact several bills looking to the creation of the office of State Inspector of Mines were introduced in the legislature but none of them were passed. The particular bill for which the miners contended, providing for the appointment of four inspectors was defeated in select committee. The objections that the lobbyists had to contend with were similar to those advanced in Ohio. The representatives from agricultural districts could not be made to see the need of inspectors. One objection in particular carried such weight in Illinois at this time that its effect may be seen on the mining law of that State even today -- the objection to creating new State offices. The industrial development of Illinois had been such up to this period that but few departments were needed in the government of the State. Within a very few years one office after another was created until the feeling against the creation of new offices had grown to be a stronger consideration than the arguments of the miners. Finally, Senator Hinchcliffe, in whose charge the bill now was, proposed as a compromise, a bill resembling the laws of England, Ohio and Pennsylvania in every respect except in the matter of appointing inspectors. Inspection was to be left in the hands of County Inspectors to be appointed by the County Board of each mining county in the State. This bill was passed on March 27, 1872. Under the new law, Walton Rutledge, who was elected County Surveyor of St. Clair County in 1874,

became an Inspector of Mines ex-officio, and he has held a corresponding position under all the systems of the State to this day. In 1883 when the State was divided into districts and provisions made for the examination of candidates and the appointment of State Inspectors, he was the first man appointed. In spite of that change County Inspectors still exist in Illinois as a relic of the first law; they are ~~only~~ assistants to the State Inspectors of their districts by the present law. The fact that there is no Chief Inspector or any other unquestioned head of the Department of Mine Inspection in that State today is also a reminder of the time when the people of Illinois were opposed to creating new offices.

Glancing over the amendments that have been passed since the first mining law was enacted in Illinois we find, aside from the minor changes that may best be discussed under the history of the particular provisions of the law, two distinct turning points. In 1883 the terrible disaster near Braidwood in which sixty-nine miners lost their lives by drowning, seemed to appeal in a peculiar manner to the active sympathy of the people at large. The General Assembly of the State then in session added its appropriation of ten thousand dollars to the contributions that had begun to flow in from all quarters for the relief of the women and children who had been left destitute. Its sympathy was shown, however, in a more lasting way by the enactment of no less than seven important amendments to the mining law. These provided for the appointment of State inspectors of mines as mentioned above, defined the methods of appointment, and the duties and

marked out the districts of the same; they required the construction of fire-proof buildings at the pit-head under certain conditions and the use of copper needles and copper tipped tamping bars in preparing blasts. The new laws further changed the time allowed for the construction of escape^ement shafts and removed the clause which had exempted mines employing only ten men; they prohibited the use of any furnace for ventilation which would discharge its smoke into the hoisting shaft as an upcast, when such shaft was the only means of egress open to the men. Lastly they prohibited the employment underground of boys less than fourteen years of age. The second turning point occurred in 1899 when the whole law was recast at the request of the Governor by the Bureau of Labor Statistics and the State Inspectors, and an act substantially the present law, except for minor amendments passed in 1903 and 1905, and a few more extensive amendments in 1907, was passed. (22)

(22) As these amendments pertain to details within sections they will be treated fully under their respective section-heads.

Lobbying on the part of the operators and miners in Illinois has become so thoroughly organized that the State joint-agreement is made to include a provision that "neither party to the contract shall initiate or encourage the passage of laws that would in any manner affect the obligations of this contract or abrogate its provisions except as may be mutually agreed to." (23) And whenever either the operators or the

(23) Wage agreement between Illinois Operators' Association and United Mine-Workers of America District No. 12, May 9, 1908, United Mine-Workers' Journal Vol. XLIX, No. 1, page 7.

miners succeed in having a bill passed or quashed without the consent of the other party, charges of violating the spirit or letter of the pact with reference to legislation are apt to be made. In 1905, when the shot-firers' bill became a law the operators made this charge and the interpretation of the law was left to arbitration; and in 1907, when the Illinois Coal Operators' Association sent an address to the General Assembly, denouncing the fellow-servant bills as unjust, the miners raised the same cry. (24)

(24) House-bills No. 72 and 113 and Senate Bill No. 132. See United Mine-Workers' Journal, May 30, 1907, p. 7.

The Department of Geology and Natural Resources of the State of Indiana of which the Mine Inspector's office is a branch, goes back for its beginnings as far as 1837. On Feb. 6, of that year an act was approved "to provide for a geological survey of Indiana." Papers were published from time to time containing the results of the survey including such meager information as was gathered about coal mining -- little or nothing, of course, about miners. In 1869 the forty-sixth Regular General Assembly passed a law creating the office of State Geologist and placing him at the head of a Geological and Scientific Department to act with and under the control and management of the Indiana State Board of Agriculture for the purpose of collecting information designed to promote the interests of agriculture, arts, manufactures and mining. (25)

(25) First Annual Report of the State Geologist, 1869.

In 1881, one year before the completion of the Geological

Survey, the Department was re-organized by an act creating a Department of Geology and Natural History. This department had nothing to do with the department of mine inspection although for some time (1879 to 1889,) they duplicated each other's work to a considerable extent. Finally, the two departments were merged for political reasons, as we shall see, in a Department of Geology and Natural Resources which is still in existence. Thus, there has been brought about an organization of the mine inspection forces and a coloring of the whole mining law that is different from what we find in any of the other States.

The first law passed in Indiana specifically for the control of coal mining was an act of the Fifty-first General Assembly, approved March 8, 1879. (26) It was modeled after

(26) For an outline history of Indiana mining legislation, see Annual Report of the Inspector of Mines 1898, in Report of the Department of Geology, etc., p. 1575.

For some of the later statements I am indebted to the present Inspector of Mines, James Epperson, his secretary and the officers of the United Mine-Workers, in addition to those specially quoted or mentioned later in the paper.

that in force in the State of Ohio at that time. It provided for second outlets in certain cases, for maps of mines, ventilation, precautions in approaching abandoned workings and for putting covers on cages and gates on shafts; it required daily examinations of ropes and for gas at the working-places; it forbade child labor; it provided for the appointment of an inspector by the Governor, and lastly it prescribed certain penalties for violations. The same difficulty that had been experienced in the other two States, in combating the

argument of expense to the State had to be overcome here, too, by compromise. This time it was decided that the mine inspector's remuneration be paid by the mine-owners at the rate of five dollars a visit instead of by the State. In the codification of 1881, several changes in the mining laws were made: the requirement of mine maps was dropped; the appointment of the inspector was made subject to the consent of the Senate; and his term was decreased from four to two years; a salary was provided to take the place of fees; mines employing less than ten men were exempted, and the inspection of scales was provided for. Still in 1881 the Mine Inspector had cause to remark, "The mining law of Illinois, is in my judgment, superior to ours in some respects. The law should be made more stringent to meet some of the more pressing cases." The reports for the next two years show a marked improvement in mines, but their ventilation was still defective. The General Assembly, in 1883, provided that the rope used for hoisting and lowering in every mine must be a wire rope, and that a checkweighman, employed by miners, be permitted to perform his duties. In 1885 an act was passed "providing the means for securing the health and safety of persons employed in coal mines, providing penalty for the violation thereof, and repealing all laws or parts of laws in conflict therewith" (Approved March 5th, 1885). In this act provision was made for the driving of air-courses parallel with all entries, for breakthroughs every seventy-five feet, for the keeping of a sufficient supply of timbers at the mines, and delivering them to the working places, for the filing of

maps of abandoned mines with the County Recorder, for putting safety-catches on cages, and for visits to all working-places by foremen, every alternate day. Two years later, in 1887, there began in that State one of the most remarkable political conflicts ever waged in an American State-legislature.

(27) Some doubt having arisen as to the validity of the elec-

(27) The account of the political struggle here given is based on the accounts in Appleton's Annual Cyclopedia and Register of Important Events, for 1887, 1889, 1891, and 1893. The facts stated there merely corroborate a verbal statement made to me by Mr. Russel the present Commissioner of Labor of Indiana, formerly President of the United Mine-Workers of America District No. 11 (Indiana).

tion of the Lieutenant-Governor, a determined fight between Republicans and Democrats was instituted that was not settled until 1893. Meanwhile its effects were felt through drastic legislation in nearly every department of the State in which appointments were involved. In 1889 both houses were controlled by the Democrats, while the Governor, Alvin P. Hovey, and the principal executive officers were Republicans. The legislature proceeded at once to introduce and pass over the Governor's veto a series of measures designed to deprive him of his appointing power, and to vest it in the General Assembly. The offices of State Geologist, Mine Inspector, and State Inspector of Oils were abolished and a Department of Geology and Natural Resources was created. Over this, a Director to be elected by the General Assembly every four years, was to preside, and into his hands was given the appointment of the chiefs of the four divisions: Geology and Natural Science, Mines and Mining, Mineral Oils and Natural Gas. Many other positions were dealt with similarly. The

fight between the Governor and the General Assembly was now carried to the courts. In the case of the State Institutions it was decided that the Constitutional requirement that the legislature provide for the maintenance of these institutions, implied the power of electing directors. The acts providing that the State Geologist and State Statistician be chosen by the legislature were passed upon early in November, in the cases of Warrell against Peale, and Jancey against Hyde. The court held both acts void as these offices were not in existence at the time of the adoption of the constitution and therefore not within the meaning of Section 1, Article 15, which provides that "all officers whose appointments are not otherwise provided for in the constitution shall be chosen in such manner as now is or may hereafter be prescribed by law" -- the phrase "all officers" meaning all those existing at the adoption of the constitution. The court further declared that the appointment of such officers was an executive and not a legislative function and that the legislature could not be considered to have such power of appointment, unless as in the case of public institutions, it was expressly given by the constitution. It was also decided by the court that the people had the right to elect all such State officers created by the legislature, whether the act creating them so provided or not, and that in the meantime the Governor could fill vacancies. Under this decision the original acts creating these two offices were restored, and the Governor's appointees became the legal incumbents until the next general election by the people. Meanwhile the mining interests suffered. When the General Assembly convened again in 1891, a

Democratic State Geologist had been chosen by popular election. This made the taking of the Governor's power from him comparatively easy for the legislature. They abolished the office of State Inspector of Oils and substituted the office of State Supervisor of Oil Inspection, to be filled by appointment of the State Geologist; the office of Mine Inspector was abolished, and the office of Inspector of Mines, to be filled likewise by the appointment of the State Geologist, was created; and so on, in the case of a number of acts, all passed over the Governor's veto. The same legislature provided also for an Assistant Inspector to be appointed by the Inspector and removable by him for cause. It required also the use of accurate scales of standard manufacture for weighing coal and for the testing of scales each morning by weighmen; and that lights and gates be kept at the top vein, where two veins were being worked. It established a code of signals for hoisting shafts; legislated concerning inquests in case of fatal accidents; strengthened provisions for the circulation of air in the mines; and prohibited the employment of females in and about the mines. Many of these provisions had been passed in 1889, but the bill as engrossed in that year, omitted the accessory clause "Be it enacted by the General Assembly of the State of Indiana," and consequently the whole process of passing the law had to be repeated two years later at the next session, to remove all doubt as to the validity of the law. In 1897 a law was enacted providing for the examination of mine-bosses, fire-bosses, and hoisting engineers by the Inspector of Mines; for notice to the Inspector of all serious accidents occurring

in mines; for written acknowledgments by mine-bosses when notice is given of an unsafe place; for the making and filing of maps, and monthly reports of tonnage and wages; and for permission to substitute hoisting apparatus for stairways in certain cases. In that year a bill providing for the use of pure oil passed the House of Representatives too late to be acted upon in the Senate, and one for the inspection of smaller mines failed of passage in the House. (28) The

(28) Report of the Inspector of Mines 1897,
p. 299.

miners' oil law was enacted in 1899; and an act regarding the use of explosives was passed in the same year. The entire law was recast on February 28, 1905; and additional laws regarding the use of explosives and other matters were passed in 1907; together giving us the law as it exists today.

With this general history of the laws in mind we are prepared to turn to a more detailed analysis of each of the provisions as it exists today in each of the States and trace its evolution back to its earliest form, recording, as we pass, the story of its operation and the reasons for all those changes for which reasons are given.

CHAPTER II.

Definitive Clauses.

The definitions of the subjects of the law, especially of mines, have received so little attention at the hands of legislators and are so important because, whether expressed or implied, they determine the scope of the laws, that it seems best to collect all such passages as bear on the scope of the mining laws and formulate the definitions that they presuppose. It was not until 1899 that the legislature of Illinois, following the example of Pennsylvania, set aside a whole section of the law for definitions (Section 34). (1)

(1) See Bituminous Mining Laws, of Pennsylvania, Article 22, approved May 15, 1893. The term "owner or agent" was incidentally defined in a clause in the older Illinois statute.

Indiana, on the other hand, included separate sections of definitions in its very first act. (2)

(2) Section 1, of the act of 1879, was devoted to a definition of the term "mine," and Section 7, to a definition of the terms "owner" and "agent" corresponding to the term "operator" in the current Indiana law, Section 1, Act Feb. 28, 1905.

The Ohio law does not contain, and never has contained any special section devoted to definitions.

The most important term to be defined is "mine". Strictly speaking at common law, a mine is a tunnel, shaft or other opening in the earth, made for the purpose of getting out the underlying minerals. (3) The statutory definitions

(3) Springdale Coal Mining Co. v. Grogen, 53 Ill. App. 65. This definition would exclude quarries, which are not under-ground, from the jurisdiction of the Ohio Inspector. Still the Reports of the Ohio Department have included Zimostone quarries since 1886 on the initiative of the Inspector. Reports, 1886, 1887. Both Illinois and Indiana now include surface workings for coal in their definition.

of both Indiana and Illinois limit the meaning of the term to coal mines, thus narrowing the scope of the whole law and leaving with-

at any supervision the production of the lead, zinc, limestone and dolomite, fluorspar and other mine products of Illinois valued at about four million dollars a year and of those of Indiana exclusive of coal, petroleum and natural gas, valued at even a greater amount each year. In Ohio, on the other hand, Section 92 of the Revised Statutes, declares specifically, "the Inspection and examination herein provided for shall extend to fire-clay, iron-ore, and other mines as well as coal mines". When gypsum mines were opened recently in Ottawa County, the Chief Inspector of Mines had to be consulted regarding certain dangers from water. Although the Ohio law did not include this generalizing clause until 1884, the act of 1874 seems deliberately to have substituted the word "mine" for "coal mine" in Mr. Roy's draft. Wherever the Ohio law uses simply the word "mine," then, the law applies to all mines; that is, in the law of inspection, the oil laws, the laws granting right of way and the right to cross roads, provisions for the care of injured at mines, for the making of ^{maps} and the regulation of child labor. In the case of second outlets, safety apparatus, employment of engineers, safety lamps, rules of weighing and miner's lien laws, the acts specify that only coal mines are intended.

Another point of distinction in the meaning of the word "mines" as used in different statutes, is raised by such a clause as the following, taken from the current Indiana law: "The provisions of this law shall apply to all mines except to mines employing less than ten men." (4) Up to 1883, Illinois included a similar provision in its law, and up to 1888 Ohio contained the same restrictive clauses. Strange to say, the Indiana law began its career where the other laws ended, by applying equally to all mines of the State.

The change was made when the statutes were revised in 1881, by the insertion of a section covering the same ground as the quotation above, and since then the ~~exemption~~^{exemption} has been lamented by the inspectors of Indiana just as it had been by those of the other two States before it was removed. To cite a few examples from these two States: In 1882 the inspector of McDonough County, Illinois, wrote: "I think the law should be changed to protect miners, irrespective of the number employed in any one place." In the same year the Inspector of Warren County, Illinois, actually inspected the mines in his district, employing less than ten men, in spite of their legal exemption, because, as he stated naively, otherwise all the mines in his district would have been excepted. He stated, as his conclusion that the small mines needed the mining law more than the large ones. The clause exempting mines employing less than ten men was removed by an act passed June 18th of the next year. In Ohio, the recommendation to strike out the words "with more than ten men at once," was made in 1886 and repeated in 1887, on the ground that the provision of Section 18 of the original act, giving the inspector jurisdiction over the small mines, only on the application of the proprietor or workmen, was wholly inadequate. In 1888, the Inspector was given the power to include these mines, at his discretion. In the next Annual Report we find a justification for the change. "My predecessor," says the Inspector, "in the Twelfth Annual Report, of 1886, places the number [of mines employing less than ten men] at four hundred, and says, 'As will be seen under this Section the Inspectors of Mines have no legal right to enter any of these mines for the purpose of inspection, unless upon application, made by the operators or the miners employed in them.

It is unnecessary to consider the probability of such invitations being extended by the mine owners. Whether the assumption be correct or not, the miners employed in these mines claim that if they were to ask a visit from the Inspector their employers would at once discharge the party suspected of having extended the invitation. It is by no means improbable that this may be true in some cases. However, be it true or not, the fact remains that these miners hesitate to make their needs known, preferring to suffer from bad air and other inconveniences rather than run the risk of losing their situations and the opportunity of supporting themselves and their families. Hence, in reality the sheltering wing of the law, while guarding the men employed in the larger mines does not extend to or cover the large body of men working in these smaller mines. The manifest injustice of this state of affairs needs no demonstration.' The experience of the Department during the six and one-half months since the law, as amended, went into effect, is that the mines that were heretofore exempt from inspection, were, with very few exceptions, in a deplorable condition, both for safety and ventilation; even those operated by the head of a family, his sons being the only assistants employed were no exception to the general rule. In many cases this class of mines receives little or no attention during the summer months, and are permitted to undergo the same general demoralization that is common to all mines when remaining idle. The resumption of mining brings with it the disasters following the perilous occupation of the miner. The often limited resources of their market relieve the operator of a necessity of adopting a systematic manner of running, and as soon as the timbers become decomposed to any extent,

the pillars are found to be too small, which ^{has} been found to be the case in very many instances. A system of ventilation, as a rule, has been found to have been entirely omitted, as air shafts are the rare exceptions. As before stated in this report, and the comments of my predecessor heretofore, more than one-half of the mines of the State have been allowed to evade the provisions of the mining law. In 1892 the Section in question was entirely repealed and small mines were put on the same footing as larger mines. The very same difficulty as that remedied in Ohio, is noticed in Indiana four years later. In that year (1896) the sixth of a series of recommendations for future legislation is "that some provision be made for mines employing less than ten men." In 1897, the inspector goes into the early history of the question. "Of the mines reported (in 1897, when the original law applying to all mines was passed) 115 employed less than ten men, leaving but 62 employing more than that number. 388 of the 3459 employees were employed in those small mines." The next year's report goes into the special reasons for demanding some supervision of the small mines in Indiana. "There are numerous mines in the State which, during some part of the year employ a sufficient number of men to bring them within the operation of the law, and for the rest of the year employ but a few men. If the inspector visits them at a time when less than ten men are employed, he has no power to order improvements made, and the visit is wasted. (5) When the number of men is increased, the mine is run

(5) This same trick to evade the law was tried in Ohio the very first year after the law was passed. Chauncey Andrews, then the leading operator of Ohio, was being tried before Judge Taylor in Mahoning County.

"How many men do you work in the mine?" was asked.

Andrews - Ten.

Woodworth - Is that the usual number you work in that mine?

Andrews - No, I sometimes work more.

Woodworth - How many underground people do you usually employ?

Andrews - I don't know.

Woodworth - Eighty, ninety or a hundred?

Andrews - Yes, about that many.

Woodworth - When did you reduce that force to ten?

Andrews - Yesterday.

Woodworth - Why did you reduce the force to ten?

Andrews - Because I wanted to. --- (See. U. M.-W. J. Vol. XVIII. No. 28.)

without complying with the law, and as this is usually at the busy season of the year, visits of inspection cannot be made without neglecting more important work. In addition to this, employees of small mines are denied the protection and benefit of the law at all times." An attempt was made, in 1900, to force the law to apply in cases where ten men were not employed directly in mining coal, but the Attorney-General ruled that the number of men in a coal mine should not be added to the number in a clay mine to make up more than ten. Still he thought the inspector could forbid the use of the same shaft for both purposes. The defect in the law has not yet been remedied, and the sentiment expressed by the State Geologist in 1905, that the law should be so changed as to require the examination at least once each year of every mine operating in the State, regardless of the number of men employed, is no doubt the feeling of the Department to-day. (6)

(6) Several bills to this effect have been introduced in the General Assembly and killed in committee or defeated, as in 1897. See Inspector's Report, p. 299.

Other questions regarding the scope of the law, or the actual meaning of the word "mine" as used in the law, can best be considered along with special provisions with which they are connected; for example, the requirement of second outlets, only in mines of a certain size, or at certain stages of their development will be considered in discussing "second outlets." (7)

(7) The Illinois definition, 34 (a) reads: "In this Act the words "mine" and "coal mine" used in their general sense, are intended to signify any and all parts of the property of a mining plant, on the surface or underground, which contribute, directly or indirectly, under one management, to the mining or handling of coal." The Indiana definition is: "The workings in every shaft, slope or drift which is used or has been used, in the mining and removing of coal from and below the surface of the ground."

A second subject of definition that bears on the whole law is the word "operator," that has gradually come to displace such awkward and ambiguous phrases as "the owner or agent," "the owner, agent, or manager" and "the owner, agent or operator" in the early forms of the laws. On a proper definition of this word or an equivalent, depends the whole question of who is responsible for the enforcement of the laws, and liable for their breach. In Indiana, Section 7 of the original law defined the term "owner" as "the immediate proprietor, lessee, or occupier of any coal mine or any part thereof, and the term "agent" as "any person other than the owner thereof having the care and management of any coal mine or any part thereof; and in case the mine is owned or occupied by a corporation

then any of its officers." This same all-comprehensive definition of the person responsible is included in the present Indiana law under the term "operator," (8) except that bodies corporate are made

(8) Section 1. This definition was originally copied from Sec. 5 of the older Illinois law.

liable as such and not merely through agents and officers. In fact, prima facie, the agent is not referred to in the present definition at all and can be reached only as the "occupier" of a coal mine, or a "person upon whose account the mine is operated." (9)

(9) Act of February 28, 1905, Indiana. Section 1. " - - - The term operator as used in this act is hereby defined to mean any corporation, company, firm, person, proprietor, lessee, owner, or occupier of any coal mine in this state, or any person upon whose account the mine is operated." (This statement is extremely clumsy; either the words "who is the" should be inserted before the word "proprietor", or else the law must be looked upon as speaking of "the person of a coal mine" or of contrasting the words "any person" with "any person". The meaning however is clear enough.)

When the Illinois law introduced its section devoted to definitions in 1899 the term "operator" was substituted for "the owner or agent", explained in Section 3 of the older forms of the law, and clearly defined so as to exclude all but the immediate proprietor as owner or lessee of the plant. Here too, the term extends to bodies corporate and firms, as well as to natural persons. Finally it suggests the principle that any one not responsible for the condition and management of the mine is not included in the term "operator" as applied to the party in control of a mine in the act--a principle which the operators of Illinois have emphasised, both in their

interpretation of the fellow-servant rule, in view of the growth of the power over employment exercised by the mine-workers' unions, and in their unsuccessful attempt to shift their responsibility for the acts of their hoisting engineers, when the State limited their power of selection of men for this position. (10)

(10) Section 34 (2) of the Illinois Mining Law: "The term 'operators' as applied to the party in control of a mine in this Act, signifies the person, firm, or body corporate who is the immediate proprietor as owner or lessee of the plant and as such, responsible for the condition and management thereof."

Other term specifically selected for definition is the Illinois law are; excavations and workings, shaft, slope or drift, inspection, mine-manager and mine-examiner. All of these words are used in their ordinary senses with the exception of "Inspector", which because of the peculiar condition in Illinois, where County and State Inspectors exist side by side, must be defined to mean the "State Inspector of Mines within and for the district to which he is appointed". It is probable that the last limitation, namely, that an Inspector is an Inspector only for his district, is implied in Ohio, too, in the case of all but the Chief Inspector, for the law provides for districting the State. (11) The Indiana

(11) The Chief Inspector may however assign duties to the District Inspectors in other parts of the State at his discretion.

law says nothing about districts. Since the other Illinois Definitions are in accordance with common usage, and in the absence of decisions or legislation to the contrary, with the usage in the statutes of the other States, I shall conclude my discussion of

definitions by quoting them.

Excavations or Workings.† "The words 'excavations' and 'workings' signify any or all parts of a mine excavated or being excavated, including shafts, tunnels, entries, rooms and working places, whether abandoned or in use."

Shaft.† "The term 'shaft' means any vertical opening through the strata which is or may be used for purposes of ventilation or escapement, or for the hoisting or lowering of men and material in connection with the mining of coal."

Slope or Drift.† "The term 'slope' or 'drift' means any inclined or horizontal way, opening or tunnel to a seam of coal to be used for the same purposes as a shaft."

Inspector.† "The term 'Inspector' in this Act signifies the State Inspector of Mines, within and for the district to which he is appointed."

Mine Manager.† "The 'mine manager' is the person who is charged with the general direction of the underground work, or both the underground and outside work of any coal mine, and who is commonly known and designated as 'mine boss,' or 'foreman,' or 'pit boss.'"

Mine Examiner.† "The 'mine examiner' is the person charged with the examination of the condition of the mine before the miners are

permitted to enter it, and who is commonly known, and has been designated in former enactments as the 'fire-boss.'"

Chapter III.

The Interests of the Mine-Workers:
In their Contractual Relations.

B. Clauses protective of the Interests of Parties concerned.

~~1. The Interests of the Mineworkers.~~

The laws which were primarily intended to throw safeguards around the minor to protect his life, limb and health, have been extended so as to reach him in his contractual relation. Thus they provide for liens and the time and manner of paying wages, and for fairness in estimating these wages.

Because of his anomalous position, in that the ordinary miner is not strictly speaking a common laborer, (11) he is barred from

(11) Mine-workers are often required to serve part of their apprenticeship as "day men", i. e., men paid by the day to do "company work", etc., first as topmen, and then as bottom-men. By far the greatest number of minors are paid by the ton in accordance with their individual, or, more frequently, their union contract. Inasmuch as the general rule of interpreting mechanics' lien laws is to read only the remedial portions liberally and those parts upon which the right to the existence of a lien depends strictly, as they are in derogation of the common law, the "miner" has no right under the ordinary mechanics' lien laws. (See Report of Chief Inspector of Mines of Ohio, 1882, Index).

enjoying the benefits of mechanics' lien laws, except so far as special statutes are provided. Indiana included such a provision in Section 15 of its original law, which is still preserved with minor verbal changes in Section 26 of the present law. A lien is created, paramount to all other liens except that of the State for taxes, upon the mine and all machinery and fixtures connected therewith and everything used in and about the mine, for mine work performed within two months. The Section has been tested and held constitutional and the lien granted in it declared to have preference

over prior mortgages. (12) These liens apply, however, only to

Warren v. Sohn, 112 Ind. 215.

the interest of the employer in the mines. (13) In Illinois a

Hopkins v. Hudson, 107 Ind. 191.

lien is given for "labor in opening and developing any coal mine, including sinking shafts, constructing slopes or drifts, mining coal and the like," on all the "property of the person, firm or corporation owning, constructing or operating such mine, used in the construction or operation thereof, including real estate, buildings, engines, cars, mules, scales and all other personal property, for the value of such labor for the full amount thereof, upon the same terms, with the same rights and to be secured and enforced as mechanics' liens are secured and enforced." Although this law was passed in 1895, after being urged from time to time for more than a decade, it has never been tested, as the miners have been unwilling or unable to go into the litigation single-handed. There is a general feeling among both miners and operators in the State that it will be declared unconstitutional. (14) Nevertheless the United

(14) This is the opinion of Hon. David Ross. The law had been urged thirteen years before its enactment. Report, Illinois 1882, Peoria County.

~~State~~ Mine-Workers of Illinois are making a test of a suit in the name of George H. Allen and others against B. H. Higgins and others for two thousand, two hundred dollars wages earned in opening an unsuccessful mine. It is said that the organization will carry the case up to the highest court if necessary. (15) The present Ohio miners' lien law was passed in 1889. It is more general than those of the

(15) See United Mine-Workers Journal Vol. XVIII, No. 41, p. 2.

other two States, both in specifying the beneficiary of the lien and in designating the property to which it shall apply. "Any person", says this law, "who performs labor in mining coal, or removing the same from the mines, or other manual labor connected therewith, for any coal or mining company owning, operating or leasing coal mines within this state, by virtue of a contract with the owner, owners, or his or their authorized agent, shall have a lien to secure the payment for the same upon the mine or mines of such company and upon all the rights of the company or corporation owning or leasing such mines, and upon all the personal property of any such company or corporation used in conducting their business of mining coal, whether the same be located at or near the mines, or elsewhere." (16)

(16) The question of procedure in recording liens, though included in Section 26 of the Indiana mining law, referred to in the Illinois law and implied as a matter of course in the Ohio law is deemed too remote from the subject of mining laws to be considered here.

The section that created a mine-workers' lien in Indiana originally concluded with the words, "All wages due the miner or other persons working in or about the mine shall be due and payable on the second Saturday of the month after the month in which the work was done and all payments (to) ~~shall~~ be made in bankable funds of the State of Indiana." In 1886 the Knights of Labor and other unions expressed their dissatisfaction with this clause and recommended that the General Assembly enact the following clauses: "That all owners, agents, or operators of any coal mine shall pay their employees all the wages due and payable every week after the week in which the work

was done, and all payments shall be made on Saturday in lawful money of the United States." Whenever agitation regarding payment of wages at specified times has come up, the operators have usually objected on the grounds of unconstitutionality and the inexpediency of increasing the number of pay-days. They have maintained on the one hand, that such a regulation interferes with their freedom of contract and on the other hand, they have declared that pay-day in a mining community is invariably followed by a period of disorder, inefficiency, and danger to life and property, such as it would be unfortunate to multiply. Furthermore, they have said that the organization of the mining business is such as to render it unprofitable to pay wages at times other than those established by custom, on the basis of monthly fluctuations in the receipts and expenditures of the trade. This custom, both in Illinois and Ohio, seems to have been identical with the provision in the Indiana statute — monthly payments two weeks after the close of the month. Nevertheless during the next year, ^{1887,} a law was enacted in Ohio, to secure bi-weekly payments to employees of certain incorporated companies including mining companies. (7) In 1891 the General Assembly of Illinois embodied the

(7) Passed March 21, 1887, Vol. 84 p. 214, Section 2, amended March 27, 1889.

suggestion of the Knights of Labor in a law to which the business of coal mining was forced to adjust itself until the Supreme Court declared it unconstitutional in 1895 (8) both on the ground that cor-

(8) *Braceville Coal Co. v. People*, 35 N. E. 62.

porate charters in that State could not be amended by special laws and because of conflict with Section 2, Article 2, of the Illinois Constitution which embodies a provision of the Federal Fourteenth Amendment, that "no person can be deprived of life, liberty or prop-

erty, except by due process of law." In the same year that witnessed this decision the Indiana legislature passed a similar law (Chapter 114 R. S. 7059 ff) applying to both incorporated and individual employers. That part of the law applying to individual employers, was declared unconstitutional and the rest of the act sustained. (9) A substitute weekly payment act passed in 1899 (Ch. 124) (1)

(9) Hancock v. Yaden 121 Ind. 366. Not generally followed in the other States.

is still on the books. Nevertheless the custom is all three of the States is similar to that laid down in the Ohio law, and to obviate any difficulty that may arise from the statute in Indiana the following illegal (R. S. 7071) clause is inserted in the wage agreement of that State: "Semi-monthly pay shall continue until the constitutionality of the law providing for weekly pay shall have been passed upon by the Supreme Courts of Indiana and of the United States."

The details in the manner of payment that have received the attentions of legislators are included in the laws against the truck system and the token money connected with it and what the miners call the "gross weight laws". The evils of the truck system are not necessarily limited to the mining industry. Still as a matter of fact, possibly because of the seclusion of many mining communities, the

system has affected this industry more than any other, and it has been legislated out of existence, chiefly, if not solely, for the sake of mineworkers. As early as 1875 the question of how to deal with the store order system was before the legislature of Pennsylvania. In that year David Owens (later an Inspector of Mines in Ohio) wrote a vigorous letter to the Ohio Chief Inspector of Mines, urging the passage of an act compelling bi-weekly payments in cash and the elimination of company stores. The objectionable system was allowed to grow, however, in all the States. Though many operators at first introduced it for the convenience of their employees, others soon found it necessary to introduce it in self-protection because of the keen competition that had grown up with those operators who counted on their supply-stores for a considerable part of their profits. The Illinois Bureau of Labor Statistics a few years later speaks of two attempts to pass bills against the truck-store system, one frustrated by a veto, and the other defeated in the Senate after passing the House in the Thirty-fourth General Assembly of the State of Illinois. The Bureau felt that the discussion of the bills had been abstract, and that the extent to which the evil had taken hold of the mining industry---it was exceptional in other trades---had not been appreciated. They therefore enumerated all the truck-stores in the State, a total of seventy-five, forty-eight with competitors and twenty-seven without, and showed that one-fifth of the mines of the State were affected; that these included one-fourth of the important mines and that an average of 5,886 employees was concerned. The report went on to show the degree to which open or implied compulsion, to deal with company stores existed. It concluded with the statement that there was always an implied obligation to trade at the company stores and any disposition to ignore it would usually prejudice an

employee's standing with his employer. "Direct legislation," says the Commission, "has failed of its purpose in England, is evaded in Pennsylvania and Ohio, and miners urge other means, for example, frequent cash payment of wages, to get at the root of the evil." (10).

(10) Bi-ennial Report of the Illinois Bureau of Labor Statistics 1882, p. XXI.

The miners of Illinois, however, along with their fellow workers of the other States, had to repeat their complaint and their demands many times and in many forms before they were heeded. Statistics of all kinds and all degrees of reliability were gathered to show that company stores charged from 10 to 20% more than other stores. The Knights of Labor and Federated Association of Miners and Mine Laborers of the State of Indiana, recommended to the General Assembly in 1886 that it enact "that any person who, or firm, company or corporation which, issues any scrip, token, cheque, draft, or certificate of indebtedness, payable otherwise than in money, or designed, intended, or calculated, or used as money, or in lieu of the lawful money of the United States, or pays wages in goods or supplies through the intervention of scrip, or any other evidence of indebtedness, shall be guilty of a misdemeanor." (11)

(11) Mine Inspector's Report of Indiana, 1886, p. 52.

The unsuccessful direct legislation of Ohio referred to in the Report of the Illinois Bureau of Labor Statistics is the act "to provide against the payment of wages in scrip, orders, etc., and against selling goods or supplies to employees at excessive prices" formerly embodied in Section 7015 of the Revised Statutes of Ohio, passed in 1878, amended several times since then, and finally declared void by the Supreme Court of Ohio in a recent case. (12) It resembled

(12) Marsh v. Poston 35 B. 327.

the late^R recommendation of the labor unions in that it declared it unlawful for "any person, firm, company or corporation to sell, give, deliver, or in any manner issue directly or indirectly, to any person employed by him or it, in payment of wages due for labor, or as advances on the wages of labor not due, any script, token draft, check or other evidence of indebtedness payable ~~to~~^{or} redeemable otherwise than in money", except an order on stores in the business of which the employer has no interest directly or indirectly. A supplementary act in Ohio, still on the books, (13) resembles the present Indiana

(13) O. R. S. 7016 - 7017 passed in 1897,
and amended in 1891.

law (below) in that it makes such scrip, when issued, prima facie evidence of indebtedness. In addition it makes it a misdemeanor to attempt to coerce employees to purchase goods or supplies from any particular person, firm or corporation. Lastly it imposes a heavy penalty for selling to one's own employees at prices higher than the "reasonable" or "current market value in cash" of such goods or supplies. Needless to say successful prosecution on such grounds has not yet been recorded ~~to~~ⁱⁿ any of the higher courts of the State.

In 1891, a corresponding law was at length granted in Illinois as one of a series of labor laws bearing especially on miners in their contractual relations, some of which have since been declared unconstitutional and others questioned by nearly everyone concerned. The anti-truck law (approved May 28, 1891) attempted to do away with the whole system with one blow. Coming as it did at the same time as the "weekly payment" act it resulted in a temporary pecuniary hardship to the operators. The Report of the Bureau of Labor Statistics for the next year shows that the elimination of the company store was being

accomplished by transferring the business to others than those operating mines, and although a tendency was shown by operators to hold a hidden partnership interest, the Bureau felt that with the indirect influence of frequent payment of cash wages, the evils complained of would disappear. Sections 1 and 2 of the Act providing for the payment of wages in lawful money and prohibiting the truck system, that is, "the payment of wages otherwise than in lawful money or otherwise than the full amount earned by the employe," (14) were soon resisted and finally declared unconstitutional. (15)

(14) Definition given in Section 7 of the act.

(15) *Fraser v. People* 31 W. E. 395.

In Indiana the whole matter of wages, their transfer, and payment by check is included in Section 25, of the Mining Law of 1905. It does not prohibit the giving of checks, tickets, tokens or devices payable or redeemable in goods, wares or merchandise to a mineworker in return for an assignment of the latter's wages, earned or unearned, due or to become due. It simply provides that whenever such scrip is given, it "shall at once become due and payable in lawful money of the United States for and to the extent of the full amount of the wages assigned or relinquished for it, and the holder of such checks, ticket, token, or device shall, after demand, have the right to collect the same, with reasonable attorney's fees, by suit in any court of competent jurisdiction." (Section 26).

Another detail in the manner of paying is brought up in the "gross weight" laws; that is, provisions, such as have at different times been enacted in Ohio, Indiana and Illinois to the effect that all coal mined and not merely that which passes over a screen, be paid for.

These Acts were adopted in Illinois in 1891 and 1897; in Indiana in 1891; in Ohio, in 1898. (16) The Indiana Inspector declared

(16) A similar bill, H. B. 5, was introduced in the House in Ohio, in January, 1894, but was reported back too late to be acted on.

in 1895 that this requirement in his State was ignored in some places and that he was making a test case of that of one Joseph Martin, superintendent of the Parke County Coal Co., then pending on appeal in the Supreme Court. This case was ultimately decided against the State (17) and thus the statute was rendered inoperative.

(17) Martin v. The State, 143 Ind. 545.

The Ohio act, (18) and first Illinois acts (19) suffered

(18) In re Preston 63 O. S. 428.

(19) Ramsey v. People, 142 Ill. 380.

the same fate. A substitute has been enacted in Illinois. It is naturally regarded with a great deal of suspicion, for at first sight it is even more general than its counterparts in the other States, inasmuch as it applies to all mines and all persons engaged in mining coal. (20) The Ohio Law on the other hand *was*

(20) Still day-rate and other systems of paying may be and are contracted for in spite of this law.

limited to mines employing men at bushel or ton rates and applied only to "miners" and machine-mine "loaders." But the present Illinois law differs from its predecessor and from the Ohio law, in that it provides specifically for payment for each of the several grades of coal mined and loaded into the car, at such prices as may be agreed upon by the respective parties. The law of June 10, 1891, simply declared it unlawful to take any portion of the coal

out of the pit-car by any process of screening, or by any other method, without fully accounting for and crediting the same to the minor from whose output such portion was secured or taken. (21)

(21) Under this law it was permissible and customary to screen before weighing, estimate the amount that passed through the screen and pay on the basis of a new scale, equivalent in effect to continuing the old scale. In the central coal fields it resulted in employing miners by the day. Illinois Coal Report, 1891.

The old law was simply a gross-weight law; the substituted act permits and presupposes classification of the portions of coal, their use as the operator sees fit and a payment to the minor for what he produces. The opposition of the operators to this law, which they term the "run-of-the-mine law", is based not only on its alleged unconstitutionality but also on a claim that it encourages careless mining, causing unnecessary waste, both to the operators and to the public. It is estimated that about as much coal is wasted in Illinois as is won and that at least half of the waste could with care be spared. It has encouraged the system of coal "smashing" that has doubled the amount of powder used, and placed the practical miner on a level with the poorest miner in the world. (22) The minors on the

(22) According to Mr. Richard Newsam of Peoria, Ill. on whose statement the above is based, the rate of using powder has actually changed in many places from 35 or 40 tons to the keg, to 18 tons to the keg. See Infra.

other hand contend that where coal is run over a screen, the operator gets a quantity of valuable product that he can wash and sell without paying them for it; that the sizes of the holes in the screens can easily be changed and are frequently changed after rates are established, and that thus the actual remuneration of miners may be

reduced. (23)

(23) Report of the Inspector of Mines of Indiana, 1897.

To meet the objection of the miners, urged against the indefiniteness and lack of uniformity in the size of the screens where the "gross weight" or "run-of-the-mine" law is not in force, bills have been introduced into the several legislatures providing for uniform screens. The operators have invariably resisted such legislation on the ground that the changes involved would entail a large expense and be a burden to business; they have pointed out the difficulties incident to doing away with the improved rolling and shaking screens that had been installed in some places at great expense; and they have maintained that the proposed law would be tantamount to a requirement to weigh before screening. (24) Nevertho-

(24) Ibid.

less such a law would have been enacted in 1889 (Dec. 5) but for the accidental omission of the enactment clause; and in 1897, a bill drawn by the miners' officials was introduced into both Houses in Indiana and passed by each, but as neither house acted on the bill passed by the other before final adjournment the bills failed of enactment. Although the matter had been agitated in Illinois (25)

(25) In 1883 a bill to require "uniform screens was quashed on the ground that the character of the coal and the condition in which it came to the surface ~~was~~ so varied in different parts of the State, that to compel the use of a uniform screen would work injustice to many operators and men.

and in Ohio for a very long time, (26) no "uniform screen" law was

(26) Report of Chief Inspector of Mines 1881, especially letter from John W. Brown, a miner.

Ibidem 1882. A State Convention of miners held on October 25, of that year urged a screen law. The Inspector opposed hasty legislation in the matter and advised the appointment of a Commission.

passed in either of these States. It is not likely that one ever will, ^{for} for Illinois seems satisfied with its "mine-run" law and in the other States the regulation of screens has passed from the field of legislation to that of collective bargaining. In the scale agreement of 1899 between the United Mine Workers of America and the operators of the Central Competitive District the second paragraph reads: "The screen adopted for the State of Ohio, Western Pennsylvania and the bituminous districts of Indiana shall be uniform in size, six feet wide and twelve feet long, built of flat iron bar (27) of not

(27) In 1900 it was changed to read:
"Flat or Akron shaped bar."

less than five-eighths of an inch surface with one and one-quarter inches between the bars, free from obstructions, and such screen shall rest upon a sufficient number of bearings to hold the bars in position." The third paragraph provided for the diamond-bar screen of the Indiana ^{Block} District. These sections, or their equivalent have been repeated in all the Interstate Joint Agreements ever since.

Whatever system of paying by weight or measure may be adopted, unless some provision is made ~~is made~~ to satisfy the miners that they are not being cheated, in the matter of weighing, trouble may be expected. Provision is very readily made in the several States for the use of accurate scales, but the means of enforcing this provision and of making it clear that it is being enforced, and of authoritatively deciding disputes in such matters, present a far more important and more complicated series of problems. In general, the States have provided for a sealer of weights, usually the inspector, the right of the men to place a checkweighman on the tipple, the right of miners

to inspect records, and the taking of oaths and even the furnishing of bonds by weighmen. Many of these provisions then, are purely administrative, and will be fully considered among the administrative clauses of the laws.

The earliest laws enacted to do away with the ill feeling engendered between miners and operators as a result of weighing disputes, were the checkweighman provisions, creating the right of the miner and sometimes of others interested to place an agent on the tipple to examine the scales and the process of weighing and all records kept in the office of the company's weighmaster. The Ohio law of 1874 inserted a provision of this sort not included in any of the earlier bills or in the original mining statute of that State. It gave the miners and other interested parties "full right of access and examination of all scales, machinery or apparatus used in, or about, ~~any~~ mine or determine the quantity of coal mined, for the purpose of testing the accuracy and correction ~~of~~ ^(sic) of all such scales" etc. and also the right to appoint a checkweighman or check-measurer, "provided not more than one person on behalf of the land-owners or other persons interested in the rental or royalty jointly" be understood to have such right of access and that such persons make no unnecessary interference with the use of such scales, machinery, or apparatus. This provision like the major part of the law in which it was inserted, was based on the British Mining Law of 1872. (Paragraph 36, Checkweighor). - At first the Section was resisted as "an unnecessary and improper interference with a man's private business." Mr. Roy, who was then the Inspector, tells of his early experience with the first operators, in whose mines the workmen decided to make use of their new right; how he was forced to have recourse to injunct-

ions against those who drove away check-weighmen; how the best of legal talent attacked the constitutionality of the law, declaring that it was special legislation, that it was an invasion of proprietary rights of the mine owner, that it would be impossible to operate a mine, with such restrictions and dangers of endless trouble and strikes as the presence of the check-weighmen would engender. Judge Taylor, before whom the first cause was tried; granted the injunction requested and in five minutes the company had agreed to give the check-weighman a trial. The inspector requested the Court to dissolve the injunction. In other places the law was enforced by threats of prosecution and of strikes. (28) By 1881, the Inspector was en-

(28) Andrew Roy, in the United Mine Workers' Journal Vol. XVIII. No. 31 p. 4.

abled to report that the appointment of check-weighmen was no longer being opposed. (29) The next year a question arose as to the meaning

(29) Annual Report of the Chief Inspector of Mines of the State of Ohio, 1881.

of the Section in regard to the number of check-weighmen that could be appointed under the act. The proviso read that not more than one person on behalf of the miners collectively or one person on behalf of the land owners, etc. have such right of access. The Attorney-General ruled that this provision meant that two check-weighmen could be appointed in any one mine. A number of clauses have been added to this section from time to time (30) and, in 1898, a

(30) In 1881 clauses were added to this Section giving miners a more extended right to appoint committees of two, to inspect the mine and its machinery on the same general principal. But as such mine committees, where appointed are practically assistants to the state inspectors their functions and workings can best be understood in connection with the inspection provisions of the law.

complete weighing act dealing with the oath and bond of the weigh-master and other details, was added to the law of Ohio.

In 1882 the Illinois Inspector for Logan County complained that the law of his State was defective in that it failed to provide for the protection of miners in the matter of weighing. Much trouble and ill-feeling" said he, "is frequently engendered between the miners and the coal companies, the miners claiming that the weighing of the coal that they send up is not fairly and honestly done. I think the law should provide for some one whose duty it should be to see that coal is carefully and fairly weighed and properly entered to the credit of the miners." On June 14, of the next year, such an act was approved as one of the series called forth by the very general sympathy for the miners aroused by the disaster of that year. After being extensively amended, (31) declared in part unconstitutional (32)

(31) June 29, 1885: Provision was hereby made for open records, affidavit of check-weighman, changes in penalties and nullification of all contracts in which the requirements of the act as to the weighing of coal were dispensed with.

(32) Millett v. People, 117 Ill. 294.

repealed and displaced by a very similar act (33) still on the books,

(33) June 16, 1887. Amended June 16, 1891. This act like its predecessor applies only to coal mines whose product is shipped by rail or water. It does not however require contracts to be made in accordance with its terms. The amendment of 1891 removes a clause making the check-weighman an employee of the operator and requiring him to be a citizen of the State and County wherein the mine is situated.

this statute has been drawn upon to furnish the substance of the present Section on weighing (Section 24) in the Illinois law. Under

the concurrent provisions of the weighing act and that Section the operator of every coal mine where miners are paid by weight is required to provide suitable and accurate scales of standard manufacture and to have a correct record kept of all coals so weighed, which record must be kept open at all reasonable hours for the inspection of miners and others (pecuniarily) interested in the product of the mine. The person authorized to weigh the coal and keep the record must before entering upon his duties make and subscribe to an oath before some person duly authorized to administer oaths that he will accurately weigh and carefully keep a true record of all coal weighed and such affidavit must be kept conspicuously posted at the place of weighing. The right of the miners to furnish a check-weighman at their option and their own expense, the right of such check-weighman to be afforded every facility to verify the weights while the weighing is being done and his duty to make and subscribe to an oath similar to that of the company weighman are also provided for.

The experience of Indiana with regard to check-weighmen is interesting. The check-weighman law was passed in 1883 at the instigation of the miners after considerable agitation. At the end of the next year, the inspector found only two check-weighmen in the State. The reason for this neglect of an opportunity is not far to seek. It is reflected in a recommendation made by the Knights of Labor in 1886, "that wherever two-thirds of the miners of a mine determine to place a check-weighman on the tippie, the other one-third be compelled to pay their quota" and that the same be collectable "as per workman wages law". Instead of this recommendation the weighing law of 1889 provided in Section 3, that when there is no check-weighman at a mine,

a committee of one, selected by the miners, be vested with the rights of a check-weighman. The law of 1891, in Section 3, merged the two ideas by providing that whenever the mining of coal is paid for by weight "the persons employed in mining the same shall have the right of selecting and keeping in the weigh office or at the place of weighing the coal, a committee of one to be known as a check-weighman, who shall be vested with the same rights as described in Section Two of this act, said check-weighmen to be paid by said miners." In the codification of 1905 the redundant words, "a committee of one to be known as" were dropped, and the rest of the Section copied almost verbatim as Section 19. (34) Sections 1 and 2 of the

(34) Notice that neither ^{the} Indiana nor the Illinois law provides for a miners' representative to oversee measurements of coal where the coal is not paid for by weight. The Ohio law is more general in order to meet the conditions of the Hocking Valley where the system common in West Virginia is copied in many places of measuring coal by the bushel or car-load.

acts of 1889-91 require that suitable and accurate scales of standard manufacture be furnished for weighing coal; they provide that United States Standard weights be kept at the mines, to test the scales, (35) that the scales be balanced every morning by the weigh-

(35) For a history of the insertion of this clause, which makes the theory of the Inspector acting as sealer of weights practical, see under Administrative provisions, inspection, examination of scales.

man, and check-weighman, where there is one, that open records be kept and that differences between the weighman and check-weighman be regulated by the inspector of mines. These two Sections together with Section 14 of the original act of 1879, which gave persons interested the right of access to and examination of the scales, ma-

chinery and bank book in which the weight of all coal mined was kept have furnished the substance of Section 9, the principal weighing Section, of the present law of Indiana.

The presence of check-weighmen in the mines is now taken as a matter of course. They are agents of the unions, as a rule, and their duties generally include, in addition to their statutory obligations, the assigning of "turns" to the men, that is, the giving of an equal opportunity to each man to keep up with the others by dividing the misfortune of defective apparatus, balky mules, and the like, and also by warning any miner whose record begins to fall below the average. (36)

(36) As Inspector Walton Rutledge says, "The check-weighman is now the 'big man' of the mine."

Many of the provisions for the protection of the miner in his contractual relations set forth above, have been concurrently or independently brought about through the efforts of the miners themselves, or through State and inter-State joint conferences of miners and operators. Thus at the end of a great strike on June 9, 1894, (37) agreements were reached that covered the ground of subsequent

(37) Roy: History of the Coal Miners of the United States, page 319.

legislation, in both paying and weighing: wages were to be paid on a specified scale, semi-monthly, and all balances due on pay-day were to be paid in cash; miners were also to be permitted, if they so desired, to place a check-weighman of their own selection on the tipples. In 1901, the check-weighing right was granted by twenty-five companies

(38) in several States, at the conclusion of a strike. We have al-

(38) Ibid. page 359 (For August 1, 1891,
read 1901).

ready seen how the question of uniform screens has passed from the field of legislation to that of collective bargaining. It remains to be added that many other recommendations of the miners for legislation, that have remained in the undercurrent of miners' complaints and have never been acted upon by State legislatures, have followed the same course. (39)

(39). Thus in 1886 the miners' unions of Indiana wanted an eight hour law for mines passed. The legal "day" in the absence of special contracts has been defined in each of the States. Ind. An. St. § 7052; Ill. R. S. 1891 Ch. 48; O. R. S. § 4365.

The courts, too, have tended to check legislatures in the matter of limiting the right of individuals to contract as they see fit, by declaring such laws as the "gross weight" acts unconstitutional, and interpreting others as applying only where no contract to the contrary existed. And since the United Mineworkers of America takes its rank among the most powerful unions in the world, it is probable that the exercise of police power in the regulation of miners' contracts, will as time goes on, be resorted to less and less and the statutes be limited to their initial purpose, the protection of the lives and health of underground toilers.

CHAPTER IV.

The Interests of the Mine-Workers:

Ventilation.

Coming now to the heart of the law, the part providing against the dangers of life, limb and health, the feature that was historically the first to be developed and the most important in the minds of the men has the first claim on our attention--ventilation.

When the Ohio Commission made its investigations as to the need of mining laws they found that all parties interested agreed that the duty of providing healthful ventilation rested upon the operator. The ever-shifting body of miners, of course, could not be expected to supply the permanent improvements necessary for adequate ventilation. "All that was wanting", thought the Commission, "was to prescribe the civil and criminal penalties for any neglect or dereliction in the premises." (1) The Commission recommended that it be a

(1) P. 39 of their "Report", 1871.

pre-understood condition of every contract for the employment of laborers that the operators of works in which there are apprehensions of insalubriousness shall furnish the air supply; that they be liable civilly and criminally for any neglect of this duty; and that miners be held for violations on their part of rules established by bosses and operators. In other words, they recognized that a great part of the needed legislation with regard to the air-supply would be concerned with the question of how to enforce the performance of easily ascertainable duties. Great strides had already been made especially in the eastern part of the State of Ohio where insufficient ventilation would have entailed great dangers to life and property from the accumulation of fire-damp. The evolution of ventilation appliances had passed from the single shaft, slope or drift airway, through

the double compartment system with no other motive force than the motion of the cars, through the stage of the hanging fire-basket calculated to heat the air and create an upward current, through the "steam-jet" arrangement for the same purpose, to the furnace.

(2) Indeed, fans were already in use at that time in England and

(2) For a general account of early systems of ventilation see Roy: The Coal Mines, 99ff.

For details I am indebted to President T. L. Lewis, of the U. M.-W. of A., whose home is in Bridgeport, O.

in the Anthracite District of Pennsylvania and they were just on the eve of making their way into the large bituminous mines of America. (3) But in general the progress of ventilation before the days

(3) Ohio Mining Commission's Report, p. 85.

of mining laws, had been very slow, especially in the smaller establishments. Operators insisted ~~for example~~ that the Ohio mines were not deep enough to be dangerous or to require artificial ventilation, though, as a matter of fact, deep mines are more easily ventilated with a furnace than shallow mines. (4) Moreover, the great change

(4) Ohio Mining Commissions' Report, p. 69.

already referred to in the method of mining, the substitution of unskilled "coal-smashers" for skilled miners that had been instituted during and after the Civil War and the indiscriminate use of powder and the unsystematic working that naturally resulted had gradually made some improvement in ventilation imperative. (5) So important

(5) Report of the Chief Inspector of Mines of Ohio, for 1902.

was this phase of the early agitation for mining laws in the eyes of the miners themselves, that they called their bills and acts "Ventilation Laws" and their Inspector the "Air Inspector". (6)

(6) Report of the Chief Inspector of Mines,
of Ohio, 1882, p. 44. See also Report of 1874.

The first bill introduced into the Ohio legislature as amended by a Select Committee required fifty-five cubic feet a second of pure air for each fifty men and "as much more as circumstances may require" produced by any suitable appliances capable of insuring constantly "an abundant supply of fresh air throughout the mine." The revision introduced in the Senate the next year substituted "one hundred cubic feet per man per minute", and in 1874, when Inspectors were provided for, "as much more as the Inspector may direct," ^{was added,} without specifying the kind of appliances to be used. In 1880 the Inspector recommended that artificial ventilation be required. The next year a considerable number of clauses were added to Section 298 of the Revised Statutes (the ventilation section) including one to the effect that "all mines governed by the statute shall be provided with artificial means of producing ventilation, such as forcing or suction fans, exhaust steam, furnaces or other contrivances of such capacity and power as to produce and maintain an abundant supply of air." Since then an average of forty-three furnaces, twenty-eight fans and four baskets has been added each year. The number of fans per year is increasing, the other means ~~of~~ decreasing, proportionately, some disappearing entirely. (7)

(7) For a table of improvements added in Ohio each year from 1884 to 1906, see Thirty-Second Annual Report of Chief Inspector of Mines, 1906, p. 140. On the passing of the fire-basket see the Ohio Inspector's Report for 1902, p. 69. The steam-jet system has almost entirely disappeared, the number in use in Ohio having decreased from 52 to 13 in ten years. See 1906 Report, p. 105.

In many cases the inspector has used his discretionary power (8) and specified the kind of ventilation that he would require.

Quoted
(8) Granted in 292 O. R. S. See infra,
Inspector's powers.

(9) This same discretionary power has been taxed to make up for the

(9) See. e. g. Ohio Report of 1889.

ommission of an expression as to the minimum of air required in mines from Section 298 that had been included in the act of 1874--"and as much more as the Inspector may direct." Otherwise the present Ohio law may be said to embody all the provisions of the Act of 1874 with regard to the creation of an air supply together with the extensive amendments of 1881 and 1886. In the score or more of years that have elapsed since the last amendment of this law many new conditions have developed in Ohio, that have rendered what was formerly an ample air supply, wholly inadequate. One of these changes in particular deserves ~~as~~ our attention as it will sooner or later appear in other States: pick-mines that ~~had been~~ ^{were} opened and equipped many years ago, in keeping with the methods and plans of those times, with entries only six or seven feet wide, calculated originally to serve for the working of only two or three hundred acres of territory, are now being worked in consequence of the new methods of long-distance, high-speed haulage for two or three times their original daily output. "When we realize," says the Ohio Chief Inspector, "that there is a long trip of large mine-cars which almost fills the whole space in the entry, running at high speed to and fro from morning until quitting time, drawing the black damp from the old workings, continually buffetting and interrupting the ventilation current, it is very easy to imagine how impossible it is to maintain proper ventilation under such circumstances." (10) One veteran miner who had worked in one of these

(10) 31st Report of the Ch. Ins. of Mines of
Ohio, 1905, p. 33.

old mines in Jackson County told me that the difference between breathing during an in-trip and during an outward trip was easily felt. The Mine-Inspector suggests that haulways of this character should never under any circumstance be used as an intake or return airway. In this and in other new conditions unnoticed by the law he must fall back upon the very slippery ground of the discretionary power provided in Section 292 of the Revised Statute and promulgate such rules for bringing a sufficient supply of air into mines as he thinks should be enacted into law.

The first Illinois law called for an "adequate amount of ventilation." In 1879 this was changed to a "sufficient amount of ventilation to be determined by the Inspector at the rate of one hundred cubic feet of air per man per minute to be measured at the foot of ^{the} down-cast." "Any suitable appliances" without further specification, were regarded as satisfactory for the production of this current. Every year up to 1882, complaints were raised throughout the State because of the inadequacy of the provision. One Inspector (in Henry County) said: "Ventilation in the mines of this County is very defective. The freedom we enjoy from noxious gases makes the operators very careless." There were no fans and there was but one smoky furnace in that County. Another wrote (for LaSalle County): "Section Four of the mining law is found in practice in this county to be inadequate in its requirements to the proper preservation of the health of the men employed in the mines. One hundred cubic feet of air per man per minute, is insufficient in any large mine where the separate current system is not adopted." He recommended at least an additional hundred cubic feet a minute for

every acre of goaf. Still another Inspector remarked in the same year: "I would also recommend the compulsory use of the fan for ventilation purposes as a mechanical appliance which can always be relied on for a continuous current of air regardless of atmospheric conditions. (11) In the next year a proviso was added to the section

(11) Biennial Report of the Illinois Bureau of Labor Statistics, 1882.

prohibiting the use of a furnace emitting smoke into any compartment constructed in or adjoining any coal hoisting shaft or slope where such hoisting shaft or slope was the only means provided for the ingress or egress of persons employed in the coal mine. Since 1899, the law of Illinois has required ventilation produced by a fan or some other artificial means; the quantity of air required to be kept in circulation and passing a given point is "not less than one hundred cubic feet per minute for each person, and not less than six hundred cubic feet per minute for each animal in the mine, measured at the foot of the down-cast, and this quantity may be increased at the discretion of the Inspector whenever in his judgment unusual conditions make a stronger current necessary." (12)

(12) The last clause has been in the law since 1885. The report of that year comments on its wisdom.

In Indiana, too, ventilation was the most sorely needed and most important part of the original law. The first Inspector remarked: "On my first visit to the mines of this {Clay} County I found ventilation very deficient." (13) In another County {Fountain} he found the air passing along the main entry averaging only

(13) Report of the Mine Inspector, 1881.

thirty {cubic} feet per minute for each person employed in the mine.

and not even that amount reaching the working faces! (14) Most

(14) Ibidem 1879.

of the mines relied on natural ventilation which was greater at certain seasons of the year than at others. A few had furnaces and one, belonging to the Brazil Block Coal Co., had placed the first ventilating fan in the State in position during that year.

(15) The law of that year required one hundred cubic feet per

(15) See Reports 1879 and 1897.

man per minute produced "by any suitable appliance that will produce and insure a constant supply of pure air throughout the mine." The present law embodies these provisions requiring in addition three hundred cubic feet per minute for each mule, horse or other animal used in the mine and adding the phrase "and as much more as the circumstances require." In view of the discretionary power of the Inspector whenever he finds men working without sufficient air, this last phrase becomes significant. (16)

(16) Section 11 of the Act of 1905.

That distributing the air supply properly was quite as important as creating a sufficient flow at the outset was not realized when the first laws were passed. In Ohio the clause read: "Which shall be circulated to the face of each and every working place throughout the mine." (Section 9). In the case of mines generating fire-damp a little more attention was paid to effective circulation. Such mines were to be "kept free of standing gas" (Section 9) and the doors used in assisting or directing the ventilation of such mines were to be so hung and adjusted that they would shut of their own accord and could not stand open. (17) Nothing was said about

(17) Special inspection and measuring of the air by the mine-boss were also provided for in such mines: See Administrative provisions, through mine officials. (18)

splitting the current, break-throughs, or as they are sometimes called, cross-cuts, and stoppings in all but the last breakthrough, air-bridges or overcasts or even of ventilating doors for the vast majority of the mines of the State. (18) It is not long, however,

(18) Less than half a dozen mines in the extreme eastern part of the state were then known as "fiery" mines. In 1906, the number had gradually been increased to 84.

before we find complaints about acts of carelessness causing an ample supply of air to be quite useless for certain parts of the working face, because of leakage or because of the advancing of the workings too far beyond the current, a difficulty that is still being complained of in Ohio today. (19) And there is evidence that the

(19) Report of Chief Inspector of Mines of Ohio, 1906, p. 384, also p. 27 to p. 29.

carelessness was even greater in the long periods between the visits of the mine inspectors, than the official reports would indicate. In 1877, the inspector pointed out in his report, that the distribution of air need not and cannot be "to the face of each and every working-place," as the law required, and suggested as a practical and enforceable substitute that the workings shall not extend more than one hundred feet beyond the current. In 1881 this suggestion was practically adopted, and the following clause appended to Section 298 of the Revised Statutes; "No working place shall be driven more than one hundred and twenty feet in advance of a breakthrough, or air-way; and all break-throughs, or air-ways, except those last made near the working faces of the mine, shall be closed up and made air-tight, by brattice, trap-door, or otherwise, so that the currents of air in circu-

lation in the mine may sweep to the interior of the mine, where the persons employed in such mine are at work." In 1886 the distance between break-throughs was changed to sixty feet. This change did not receive the sanction of the Inspector of Mines however, and he frankly stated that he thought it quite unnecessary. (20) He

(20) Report 1887.

even recommended that the law be changed back to its old form. Nevertheless it has continued on the statute-books without being much heeded until recently by the Mining Department or the operators in many localities. (21) The condition in eastern Ohio a few years ago was

(21) Report of the Chief Inspector of Mines, 1906, p. 27, also Report of District Inspector, 4th District, in Chief Inspector's Report of 1904 p. 252, as to negligence in making cross-cuts in machine mines and bad effect on "loaders."

thus described by the present Chief Inspector; "A great majority of the mines in the No. 8 seam in that field are good mines, well equipped with modern machinery and appliances, have adequate fan power, and can produce an abundant volume of air at the inlet; but the great trouble was on account of the absence of breakthroughs and a proper method of conducting the current, it seeking the shortest route to the outlet and never reaching the working places of the miners. Nearly every visit we made to the mines in that district, the same conditions were encountered. Few break-throughs were found less than 100 feet apart in entries, and, in a majority of cases, rooms driven 200 and 300 feet; not the semblance of a current of air nearer the face than the outer end of the room, and the miner's working place filled with powder-smoke, coal-dust, fumes from the miners' lamps, or rather their torch-lights, and from the excretions from the bodies

of men and stock, until they presented an appearance more dense than the proverbial 'London fog,' or 'Scotch mist,' and much more injurious to the health of those who were compelled to work in it. The argument generally met with was that the No. 8 vein operators had long been privileged with permission to drive breakthroughs in entries only every ninety feet, and that inspectors had never requested them to be made at all in rooms." The present inspecting force seems to have commenced a vigorous campaign to enforce the law more strictly. (22)

(22) Ibid. In a letter sent to District Mine Inspectors and Mine Bosses from the State Mining Department on Nov. 28, 1906 the Chief Inspector refused to consider a flow of air brought up to the working face around canvas or other artificial partitions as satisfying the conditions imposed by law.

The provision of the "break-through" law regarding the closing up and making air-tight by brattice, trap-doors or otherwise of all break-throughs or air-ways except those last made near the working-faces of the mines, has called forth much comment from inspectors. Leaky, inadequate, wooden stoppings enabling the incoming air to make a "short circuit" into the return airway, have been mentioned as the chief defects in the ventilation of the Ohio Mines. (23) The

(23) Report 1893.

inspectors have recorded many improvements in this direction. (24)

(24) Report of Chief Inspector of Mines 1897 p. 227; 1902, p. 60.

In 1902 attention was called to the voluntary substitution at one mine of brick stoppings for wooden ones. In 1904 the Chief Inspector and one of his assistants commend to the consideration of all mine managers the necessity, wisdom and economy of the use of brick or some other hard material laid in lime or cement as permanent stoppings between the intake and return air-ways in all main entries. Some of

the mining companies in this district, says one of the inspectors, use what are known as "gob-stoppings" (waste-material from the workings) in break-throughs between entries. These usually settle down from the top and are permeated at the bottom with holes made by rats or mice. Other companies use lumber which must be plastered with clay around the edges to be made air-tight. This clay is always found in a more or less dried or cracked condition, and it usually drops off and necessitates constant repairing. (25) Such stoppings are a great

Report 1904, Page 199.

source of danger in case of a mine fire: they would simply aid such a fire in spreading from one entry to another. (26) As yet Ohio has

(26) Ibid, p. 125.

no law requiring the stoppings to be a masonry.

One improvement in the laws looking toward the proper circulation of air, made in 1881, was the extension of the ventilation door clause and the other clauses formerly restricted to "fiery" mines, ^{to all mines} "whether they generate fire-damp or not." At the same time, an additional precaution besides automatic closing, to keep the air from leaking through doors, was inserted. "All main doors," reads the provision, still on the statute-books, "shall have an attendant, whose constant duty shall be to open them for transportation and travel and prevent them from standing open longer than is necessary, for persons or cars to pass through". This extra precaution, however, was rendered almost nugatory both by the interpretation of the Mine Department, (27) and more re-

(27) See Report, 1887.

cently by a ruling from the office of the Attorney-General. The Chief Inspector called the attention of the Attorney-General in 1905 to the

fact that "since the enactment of this measure, a number of new devices {had} been invented, patented and introduced into the mines, with a view of displacing the original wooden doors, the major portion of which operated automatically by the use of a simple and substantial {mechanism}, connected with and intersecting the door, and a trip-rail with which the wheel of the mining car {would come into} contact for a safe distance on both sides of the door," opening it and holding it open until a trip of cars had passed through, when the machinery would again adjust itself, quickly and effectively, closing the door." "While a number of these devices" says the Inspector, "are made of canvas, or other light material, they are very substantial and durable. The ventilating current in the mine is much less interrupted or interfered with in opening and closing them than by the use of the old doors and the boy attendant. The danger of fatal and serious accidents by trips of cars running into heavy wooden doors, which, through excitement or negligence on part of a careless or irresponsible boy in not opening the door at the proper time, is reduced, rather than increased, by the use of a well-arranged automatic door." The Assistant Attorney-General, after seeing the automatic doors in operation, interpreted the clause requiring doors to be "so hung or adjusted that they will shut of their own accord and cannot stand open," as limiting the duty of the attendant to opening the doors for transportation or travel, "The automatic doors used," says he, "are not only hung and adjusted so that they will shut of their own accord, but are so arranged that they will open of their own accord." (28) On the ground, then, that

(28) If, however, the expression "to prevent them from standing open longer than is necessary," is not equivalent to "to shut them," I fail to see its significance.

the law does not intend a vain thing, and that Section 292 gives the

Inspector an extensive discretion, he rules the attendant unnecessary.

In Illinois the early laws specified that the air supply shall be forced and circulated to the face of every working place in every coal mine or colliery so that it be both fit for men to work therein and, more particularly, "free from standing gas." In 1882 one of the Inspectors, already quoted, (29) urged that the separate current system ought

(29) See Report, 1882, LaSalle County.

to be required by the law in all large works--that no single current be allowed to pass over more than seventy-five men. In 1885 some progress was made in the direction of efficient distribution of the air-supply by giving the Inspector power to remove men found working anywhere without sufficient air to other parts of the mine, or from the mine altogether. But the suggestion as to "splitting" was not acted upon until 1887, when the following sentence was inserted in the section devoted to ventilation (Section 4): "The currents of air in mines shall be split so as to give a separate current to at least every one hundred men at work, and Inspectors shall have discretion to order a separate current for a smaller number of men if special conditions render it necessary." With a few verbal changes this provision is embodied in the general mining act to this day. To it there have been added clauses prohibiting the passing of air used for ventilating the stable into the intake air-current for ventilating the working parts of the mine and others providing for self-closing doors and trappers at principle door-ways, cros-cuts sixty feet apart and stoppings built in a substantial manner with brick or other suitable building material laid in mortar or cement if practicable, but never of lumber except for temporary purposes. These paragraphs constituting Section 19 of the

codification of 1899 have been amended slightly in 1903 and 1907. Thus the paragraph dealing with trappers read in the law of June 4th 1889, from which the codifiers adopted it that "all doors set on main entries for the purpose of conducting the ventilation shall be so constructed and hung as to close themselves when opened and shall be made sufficiently tight to effectually obstruct the air currents. In all the larger mines a boy or trapper shall be kept in attendance upon such doors to see that they are kept securely closed and the air currents properly controlled." Later legislation required places for shelter at such door-ways to protect the attendants from being injured by the cars while attending to their duties. Finally in 1903 what was later accomplished by a ruling of the Attorney-General in Ohio, was effected in Illinois by the insertion of a proviso that in any and all mines where doors are constructed in such a manner as to open or close automatically, attendants and places of shelter shall not be required. The provision regarding cross-cuts, that no room shall be opened in advance of the air-current, was changed to read that "no room shall be opened in advance of the last open cross-cut." (May 27, 1907).

In Indiana as in the other States the first provision for the distribution of air was vague and general: simply that it shall be circulated through the main headings and cross-headings to an extent that will dilute and render harmless, the noxious gases generated there in. In the very first report of the Mine Inspector it was noticed that the chief difficulty in ventilating many of the mines was one of circulation. "Many of the mines," says this report (at page 32), "are worked in an irregular and unskillful manner, and these would be

expensive to ventilate efficiently; in fact it appears that some of them have been laid out and worked without the slightest regard to ventilation. - - - Many of them have the means of good ventilation directly under their control, having a good supply of air at the intake and yet leaving the rooms practically without air." As early as 1885 the Inspector recommended that the law require break-throughs in every room at least every seventy-five feet for ventilation. He also recommended that mine owners or operators be required by law to drive air-courses parallel to all entries for the proper circulation of air in ventilating a mine. In 1885 these suggestions were brought before the General Assembly and adopted. Break-throughs or air-ways, according to the Act approved March 6, 1885, were to be made in each room at least every seventy-five feet and all break-throughs and air-ways except those last made near the working faces of the mine were to be closed up and made airtight by brattice, trap-doors, or otherwise. The doors used in assisting or directing the ventilation of the mine were to be so hung and adjusted that they would close themselves or to be supplied with springs or pulleys so that they could not be left standing open. Air-courses were to be driven properly adjoining to all entries and as nearly parallel thereto as possible, such air-courses not to exceed such width as would render them safe, with a sufficient pillar of coal left between them on account of the weight of the superincumbent strata forming the roof over the coal seam. Still the distribution of the air does not seem to have been brought up to the ideal of the labor unions. Among their recommendations of 1886 already referred to was one vaguely worded bill to the effect that "the downcast or ingross of air for the ventilation of mines

shall be conducted on the latest scientific principles from the mouth of the downcast shaft or slope to that part of the mine in actual working operation and that there shall be a sufficient amount of air passing through the nearest break-through to the working faces of mine-room and entry." Their criticism of the act of 1885 is recorded in their recommendation for the amending of Section 2 of that act. They wanted seventy-five feet changed to forty-eight feet; they also wanted such break-throughs to be made between entries as well as between rooms; they urged that trappers attend to the doors regardless of whether these doors were self-closing or not. The reason is suggested in an interesting clause that they wished inserted: "Nor shall any driver or other person by prop or otherwise, cause the same to stand open." It seems, then that some of the mine-workers themselves so little understood the reasons for the law that in their desire to save time they deliberately made the obligation imposed on the operators in their behalf, absolutely worthless. The Mine Inspector in his own recommendations that year, recognized the need of some legislation regarding break-throughs, and the regulation of working beyond air-courses. "The law should prohibit men," says he, "from turning either rooms or entries ahead of the last break-through made from an air-course to an entry. In most instances where men are at work driving either entry or air-course, there is not any more air at the head or face of such workings than is needed by the men driving such places. And when men are put to work turning rooms beyond the last break-through, they deprive those in the narrow work of the air intended for them. The result is, the men in the narrow-work often

are compelled to quit work on account of not having sufficient air to work upon." In 1891 all of these recommendations of the unions were substantially granted with the exception of that elaborated by the Inspector, the requirement of break-throughs between entries. In addition splitting for every fifty men was inserted, and a law in all other respects similar to the present section on ventilation (excepting for verbal changes required in merging parts of sections 16, 19, 17 and 18 into a single section), was passed. They had already been passed upon by the legislature in a slightly different form in 1889, and but for the omission of the enactment clause, whether through accident or design, would have been in force in that year. In the codification of 1905, two important changes were made: Break-throughs between entries were required; and the law recoded to its former position in the matter of requiring trappers, declaring them unnecessary where automatic or mechanical doors were used, subject to the approval of the Inspector of Mines. (30)

(30) Thus the same position on self-closing doors, as that reached in Illinois in 1903, by legislation, and in Ohio, in 1904 by interpretation was reached here.

As the law stands to-day, then, the distribution of the air-supply in Indiana is supposed to be such as will free the mine from standing gas of whatsoever kind; currents must be split so as to give separate currents to every fifty men, or as many less in every room and entry, at least every fort-five feet, and all but the last, near the working-faces, must be closed and made air-tight; and ventilation doors must be kept closed either automatically or by trappers.

With provision for the creation of a good supply of air and its proper distribution, and even with the creation of extensive means of putting the ventilation law into execution (which we shall study under

the head of administration) the law had still not absolutely assured the mine-worker that he would enjoy pure air. It was soon discovered that unless certain sources of defilement such as leakings from gobs and abandoned workings, the careless and unsanitary ^{handling} of drainage and of dead animals, the accumulation of large amounts of coal dust, and especially the employment of smoky oils in the miners' lamps, were stopped, no amount of legislation could guarantee the miner either pure air for breathing or an atmosphere that would not explode when danger was least to be expected.

Although no State in the district under discussion has more unmapped old workings that may be filled with water or dangerous gases than Ohio, and although the advisability of keeping bore-holes in advance of the workings in approaching adjoining workings or goaves was pointed out by the Chief Inspector in 1877 (31) the Ohio law

(31) See Report of that year.

makes no specific provision for working under such conditions. Neither has it any law specifying the thickness of solid coal that must be left on each side of the territorial line between mining properties although the old custom of leaving forty or fifty, and sometimes one-hundred, feet has been displaced by a tendency to approach the extreme limit. (32)

(32) Report of ^{the} Chief Inspector of Mines of Ohio, 1904 pp. 25, 26.

There is no regulation regarding the underground joining of mines although the practice is admitted to have its dangers in connection with ventilation and mine-fires. (33) The only efforts made by leg-

(33) Ibid.

islation in Ohio to prevent danger from leakage have been in connection with the sealing of abandoned oil and gas wells and borings on lands

containing minable coal. The number of borings penetrating the coal measures had increased so rapidly during the nineties that a real danger was apprehended lest in the working of such coal these holes be encountered causing danger of defilement of the air and possibly of inundations. In 1898 the law was passed on the subject extending the jurisdiction of the Inspector of Mines to such lands and requiring maps and other reports in connection with operations on them and providing for drilling every such well to a depth of at least ten feet below the vein of coal or other mineral "when such hole shall be cased and sealed upon the outside of the casing with suitable material to the level of the coal floor in each vein being mined." It provided further for the sealing of wells on such lands before abandonment in the following manner: "There shall be driven in such well to a depth of at least twenty-five feet below the floor of the lowest coal measure a round, seasoned wooden plug at least two feet in length and equal in diameter to the diameter of the well at that point. After the plug has been properly driven, there shall be filled in on top of the same to a depth of at least twenty feet hydraulic cement, lime and sharp sand, well mixed one part each of the two former to two parts of the latter material. Immediately thereafter there shall be driven well down into the cement, a round, seasoned-wooden plug, at least three feet in length tapering in form and to be of the same diameter at a distance of twelve inches from the smaller end as the diameter of the well at the point to which the plug is driven. Where any gas or oil-well passes through any gas or oil-bearing rock lying above the coal measures, the owner, agent or lessee thereof, shall, upon abandoning or ceasing to operate such well, drive a dry wooden plug not less than two feet in length, equal in diameter

to the diameter of the hole, to a point as near as possible to the top of the coal vein, on the top of which there shall be filled at least five feet of sediment or drillings, or cement or sand, as the mine inspector shall direct." The year after this law was passed the Chief Inspector, recorded only partial success, giving as his excuse that "as in most things the end sought can only be reached by degrees and through the application of plenty of patience and time." Seventy-five wells were sealed in the fifth district, forty-two in the third, and a few in other parts of the State. The next year, however, the real cause of the difficulty in enforcing the act of April 24th, 1898, was found to be something more than "the opposition which commonly occurs in enforcing most new laws." "There was no provision made to meet the expense thus thrust upon the Department, and owing to the increased activity of the mining industry, the time of the District Inspectors was so taken up with the real duties of his office that there was little or no time at his disposal for the additional labor entailed by this act." In other words, the administrative provisions were found wanting and on the recommendation of the Chief of the Department a revision of these provisions was embodied in a Senate Bill (Number 287) acted on, and passed April 14th, 1900. (54)

(54) This act added a provision to Section 4
"for the purpose of excluding all water from the
oil bearing rock."

In 1902 the ~~law~~ was again amended so as to remove some of its hardships by changing the distance of twenty-five feet below the floor of the lowest coal measure mentioned in describing the place for the wooden plug, to ten feet, permitting the use of "seven feet of sediment or drilling or cement and sand" for "twenty feet hydraulic

cement lime and sharp sand well mixed, one part of each of the two former or two parts of the latter material," and doing away with the necessity of an extra tapering plug to be driven down into the cement. A three-foot plug, however, is now required instead of the shorter one of the earlier law.

Unlike Ohio, Illinois provides both for boundary lines to all workings ten-feet within the line of one's coal rights, for connecting mines, and for keeping bore-holes in advance of the face in approaching old workings. On the other hand the depth of its shafts, and the limited extent of its oil and gas industry saves the State from being troubled with intersecting bore-holes and abandoned wells. (35) The ten-foot rule which has as one

(35) "In 1905 Illinois began for the first time to come into prominence as an oil-producing State".
See Ind. Dept. of Geology and Natural Resources, 31st Annual Report p. 430.

of its objects the prevention of the danger of breaking into other workings dates from 1887 (Section 3) when a clause inserted in the portion amended that year read: "In no case hereafter shall the workings in any mine be driven closer to the line of land of any adjacent owner without the written consent of such owner." The present law does not even except the case where written consent is given; its only exception is for the purpose of establishing an underground communication between contiguous mines and the rules applying to such communications may be traced through Section 3 of the law back to its very beginning. Then the act requiring two distinct means of ingress and egress for all persons employed in the mine was passed, a communication with a contiguous mine was mentioned as satisfying the conditions of the law. The manner of making such

connections and the various rights involved have been carefully provided for in subsequent legislation. In general, however, other workings, especially old workings, were to be approached cautiously. If they were believed to contain dangerous accumulations of water or gas the obligation was placed on the operator to maintain bore-holes at least twenty feet in advance of the face of the work and such side holes as might be deemed prudent or necessary. This provision had been in the law (Section 5) for a very long time. The codification of 1899 added the precaution of conducting the advances in such cases with narrow work.

The Indiana provision in approaching abandoned workings is quite similar: "When approaching abandoned workings which are supposed to contain dangerous accumulations of water or gases, the excavation approaching such places shall not exceed eight feet in width, and there shall be constantly kept, at a sufficient distance (not less than three yards in advance) one bore-hole near the center of the workings, and sufficient flank bore-holes on each side." This part of the section is taken almost bodily from the original Indiana act (Section 5) of 1879. There is no provision for connecting mines, or for sealing wells or for stopping up goaves, (36) and there seems to be no general com-

(36) Except by fencing to keep people from straying into them.

plaint of the defilement of air from these sources.

There is one phase of the question of mine air and the danger of explosions under various conditions that has been much mooted, and is to-day, although the law seems to have taken a definite stand in the matter. It is the effect of coal dust suspended in the air. That it is unwholesome, is of course admitted; but does it cause explosions? The authorities, with some respectable exceptions, seem to point in the

direction that coal dust alone will not explode, but that if the atmosphere contains ever so little gas, it will explode with a degree of violence depending on the kind of coal and numerous other complicated conditions. It has already appeared in several places in this discussion that the changes in our methods of mining have been such as constantly to augment the amount of coal dust in our mines. Miners and others connected with the work are inclined to believe that there has been too much stress put upon the dust explosion theory, (37) and perhaps for that reason are apt to allow

(37) Statement of Chris. Evans, formerly
statistician of the United Mine Workers of
America.

dangerous quantities of dust to accumulate. But the law takes no chances.

In Ohio an act passed in March, 1906, to prevent the explosion of dust-charged air and gas in mines, provides: "In case any entry or airway of any mine is so dry that the air becomes charged with dust the operator, or whoever is operating said mine, as owner, lessee, agent or in any capacity, shall have such entry or airway regularly and thoroughly sprayed and sprinkled with water or cleaned in such manner that the air will not become charged with dust." And the same act continues with a more general section embracing any combustible matter that is explosive, thus: "It shall be the duty of the state mine inspectors to enforce all possible preventive measures necessary to maintain the safety of the persons employed in any mine against the gathering or accumulating of any combustible matter that is explosive in its nature, and shall cause the operator, or whoever is operating such mine as owner, lessee, agent or in any capacity, to immediately remove any such gathered or accumulated matter."

While dust so far as Ohio mines are concerned, is largely a matter of theory, in the dry mines of Illinois in the vicinity of Pana and Taylorville, sprinkling of entries has been found necessary for many years. (38) The provision of the Illinois law in this mat-

(38) Report of Edmund G. Arnot, C. and M. E. to the Bureau of Statistics and Arbitration of the Casualty Companies doing Business in the United States, reprinted in the Ohio mining Report of 1896.

ter is included in the section of powder and blasting, (Section 20) a position suggesting at once a recognition of the cause of the trouble in dusty mines. "In case the galleries, road-ways or entries of any mine are so dry that the air becomes charged with dust, the operators of such mines must have such road-ways regularly and thoroughly sprayed, sprinkled and cleaned." (39) Among the duties of the mine manager

(39) Until the amendment of May 18, 1907, this section continued, "and it shall be the duty of the inspector to see that all possible precautions are taken against the occurrence of explosions which may be occasioned or aggravated by the presence of dust." The first part of the section is based on the law of 1889 and the last clause, the one omitted in 1907, was made out of the following clause in the law of '89, which pertained there, however, to the handling of powder and not at all to dust as in the substituted context.

(Section 16, d.) the same point is touched upon: "In dusty mines he must also see that all hauling roads are frequently and thoroughly sprinkled."

In Indiana, sprinkling is provided for in the supplementary sections added to the law on March 9th, 1907. (Section 12). "The inspector of mines shall have power in his discretion to order the sprinkling of any coal mine, or part of mine by notice in writing to the operator thereof, or person in charge of the same, and after receiving such notice it shall be unlawful for any person to act in

violation thereof and to omit such sprinkling. Copies of any notices given hereunder shall be posted at the mine entrance by the inspector of mines." Section 11 of the principal act (^{the} codification of 1905), had provided in a clause added that year, that "in case the road-ways or entries of any mine are so dry that the air becomes charged with dust, such road-ways or entries shall be thoroughly sprinkled and it shall be the duty of the inspector to see that this provision is carried out." And since the act of 1907 is cumulative of all other laws upon the subject of coal-mining except those in conflict therewith, which it repeals (Sec. 21), both provisions stand; that is, sprinkling is required even without notice where the air becomes charged with dust. The later provision is therefore in a sense purely administrative, defining the manner in which the Inspector shall see that the substantive provision is carried out. (40)

(40) It may not be out of place to add that sprinkling has its dangers. In Germany it has been found necessary to order it stopped to prevent the increase of Ankylostomiasis. See Ihlseng, M. C., and Wilson, Eugene B.: *A Manual of Mining*, Ed. 4. New York and London 1905 p. 495 and references.

Perhaps the most fruitful source of the vitiation of mine air to be contended with was, and is, the burning of inferior oils. Ohio was among the first States in the Union to feel its effects, and the first to pass laws on the subject. As most of the other mining States have since gone through its experiences of the late eighties, and copied its oil laws of the early nineties, a detailed account of these experiences and laws, supplemented by an account of the distinctive features in the parallel histories of Illinois and Indiana will give

a clear understanding of the miners' oil laws.

In the early days of mining, common tallow candles giving off an immense amount of smoke, were the ordinary means of illuminating mines. (41) They were still to be seen in some of the mines around

(41) The historical portion of this paragraph is based directly on the Mining Reports of Ohio; for 1890, 1891 and especially 1892.

Steubenville, Ohio, and no doubt in other places in the nineties. In most places, however, they had long been displaced by lard oil. By about 1877, cotton-seed oil, an article theretofore unknown to the industry began to be substituted. (42) In the eighties lard oil had

(42) The growth of the cotton-seed oil industry is illustrated by the fact that in 1872, within 40 years from its beginning two million, two hundred and fifty thousand gallons were produced; in 1880, ten million gallons of which seven went to Europe; in 1883, ninety-two million gallons; between 1883 - 9, when its adulteration had become unbearable in Ohio, thirty new mills, reducing the cost of production one-half, and increasing the yield of 30 gallons to 40 gallons a ton had been constructed. (The average yield is now over 50 gallons a ton and the total product according to Census Reports vol. IX, Twelfth Census of the United States -- Manufactures Part III (1902), p. 590 ff; where the estimates are considerably low - we was 93,325,729 gals. for 1900 of which about one-half was exported.)

been entirely driven from the market by its cheaper rival and still its higher commercial value governed the price of cotton-seed oil and of that particular variety popularly known as "miner's lard oil." This article, when pure has a specific density of less than 24° Tagliabue, the heavier grades burn slowly and generate smoke. If the seed becomes heated from being stored in large quantities before drying, the oil contains vegetable, fatty acids, productive of smoke, and indicated by a soft waxy sediment in the tanks. Compounding through a special still, with ten to fourteen percent of neutral oil, neutralizes or destroys the fatty acids, but "bung-hole" mixing of the kind that soon became general

does not. It is not known just when the crude adulteration on a large scale began, but in 1890 and 1891 it was bitterly complained of in Ohio by inspectors, miners and mine-officials. Within one year the adulteration had increased so that it became difficult to see and breathe and even to maintain an air-current in the mines. That the cotton-seed oil was being liberally adulterated with deodorized mineral oil ("neutral oil"), was admitted by the oil-houses, who offered their assistance on condition that the Inspector would attempt to cut down illegitimate competition. Soon tests began to show that although prices to the consumer remained the same, the percentage of cheap mineral oil, that is, carbon or ordinary lamp oil which yields a heavy smoke, had increased to thirty, sixty, and even seventy-five percent. In some isolated places the miners could buy only from the company; in others, where they had a choice of varieties, the fact that the oil of fellow-workmen polluted the mine, led retailers and mine-workers to "mix" their own oil and some drivers went so far as to burn "black Jack", car-grease which they obtained from the companies' barrels free. The only remedy at that time was in the discretionary power vested in the inspectors by a now untried clause then at the end of Section 292 of the Revised Statutes. (43) The Chief of the Depart-

(43) See infra p.

ment, accordingly issued notice to mine stores, operators, dealers, compounders, superintendents and bosses, stating, "Whereas it has come to my notice that in many of the mines of the state, miners and other employees are burning in their lamps oil which is adulterated to such a degree as to be both injurious and dangerous to the persons therein employed; Therefore I give notice to all whom it may concern that on and after this date, nothing but pure lard or pure cotton-seed oil of their equivalent as to the absence of smoke, will be permitted to be

burned in lamps in any of the mines of the state. Any operator who sells, or any miner or other person who burns an oil inferior to the above named oils will be prosecuted under sections 292 and 6871 (on Penalties) of the Revised Statutes." A chemist was engaged to help the Chief Inspector and a vigorous attempt made to stop the sale of highly adulterated oil. The Department admitted its inability to enforce its rulings, however, against individual miners or store-keepers. "If in any case," said the Inspector "{our effort}" has failed, the fault has not been in the purpose, but in the execution." Although a slow improvement was beginning to set in, when the General Assembly again convened they passed the first oil law. "That only a pure animal or vegetable oil or other oils that shall be as free from smoke as a pure animal or vegetable oil, shall be used for illuminating purposes in the mines of the State." As no definite standard or test was provided, the Department employed a smoke test followed by a chemical analysis. But in the smoke test the Inspector's skill was challenged, and chemical tests occasioned too much delay. A standard of some kind was soon demanded by the more reliable dealers of the State, who expressed a willingness to comply. The Department first considered a standard based on the "cold" test (conducted on the principle that the greater the adulteration, the higher is the gravity and the lower the congealing point). This test however had to be abandoned because it was impracticable for ordinary inspectors, especially when in the field. It soon made way for the simple use of the hydrometer. The Tagliabue instrument was taken as the standard and to obtain uniform results, uniform vessels were provided for: one and one-half inchⁱⁿ diameter^{and} seven inches deep, that is, big enough for the hydrometer to move in easily and convenient to

carry. At first what was known among oil-dealers as the Western Rule was adopted; for each ten degrees of temperature above or below sixty degrees F., one degree of gravity was added to or subtracted from the reading on the stem. By September 1st, experience had shown that the lightest grades of pure cotton-seed oil rarely exceeded 24° specific gravity. This was adopted as the limit. The more extensive dealers began to brand barrels with the specific gravity of the oil, and the date of shipment. These arrangements were satisfactory for summer, but when the temperature dropped to 40° , it was found difficult to make repeated tests agree, and the Western Rule had to be supplanted. Therefore at the end of the year, the specification "at 60° F." was added to the oil test rule. The rule then specified that "the oil should be tested in a glass tube one and one-half inches in diameter by seven inches in depth, and at a temperature at 60° F. When the oil is clear so as to make it possible the hydrometer must be read from below, the last line appearing below the surface of the oil .. is to be regarded as the true reading. If the oil is opaque or turbid, one-half the capillary attraction is to be regarded as the correct reading. In testing under adverse circumstances, should the gravity of the oil prove to be close to the standard, 24° , the inspector can allow $1/2^{\circ}$ for error in parallax before prohibiting its use in the mines. When the temperature of the oil is below 45° , it must be heated to about 80° , and when above 45° , and below 60° , it must be raised to about 70° , and after being thoroughly shaken must be allowed to gradually cool to 60° , before it is finally tested." Naturally this rule was resisted as arbitrary, and when the price in cotton-seed oil jumped as much as 54 cents at a time, so that in four months from October to February, it had increased 84%,

the dealers tried to cast suspicion on the Department, by blaming the act of 1892 for the rise in oil. As a matter of fact, according to the Inspector, the real cause for this advance was an adjustment due to the rise in the price of lard oil incident upon the failure of the "hog crop" out West that year. Whatever its cause, it seems to have worked as a new incentive to unscrupulousness. Thus barrels bearing the brand of the American Cotton Oil Company, J. V. Lewis, and other leading manufacturers of that time, were found to be branded with counterfeit brands, cut in brass, one-half inch narrower than the genuine. Another trick was selling good and bad oil in alternate barrels, and if detected, to blame the retailer. At this time the condition in the mines was so bad that the attention of manufacturers was turned to the creation of a substitute for miners' oil and such articles as paraffine candles (the "Miners' Sunshine" of the Standard Oil Company) were pushed in the market. These were, however, in the main unpopular. The work of testing oils went on and led, according to the Inspector, to greatly purifying the air, aiding in the ventilation of the mines and establishing a more nearly uniform quality and price of oil throughout the State than had ever before existed. During the next year however, the panic had begun to bring about great irregularities in the working of the mines and hence in inspection. Manufacturers and dealers took advantage of the situation with the result that "a quality of oil which for vitiating the air in the mines would in all probability never be equaled" was foisted on the miners. "The experience of the Department during the time which has elapsed since the passage of the Oil Law" said the Inspector in 1894 "has developed several new features which require additional guarding. It has also {shown} that the provisions of the law must be more specific and

in order to make the law productive of the desired results the writer with the assistance of the Attorney-General drew up an amended law."

(44) This law adopted the test and standard that had been developed

(44) In Report of 1893.

two years previously out of the experience of the Department, that is, a maximum gravity of 24° Tagliabue at 60° F. It was presented to the Seventy-first General Assembly by a member from a leading coal county and passed on April 19, 1894. Within a few months arrests and convictions of miners for using mixtures of their own or burning carbon-oil outright, followed. But at the same time a new difficulty, destined to give rise to much trouble and almost to nullify the law, began to appear. It was noticed that some oil of lawful gravity gave off immense volumes of smoke. The mine inspector asked that the State employ an expert chemist. The State did not, but the compounders did. The result can easily be imagined. In 1895 the record speaks of "some dark green oil," that passed all tests and baffled all attempts to analyze it, "which gave off a terrible smoke." All the Inspector could do was to fall back on the old "sound discretion" clause and try to banish the oil from the State. The oil condemned in Ohio found its way to Kentucky (45) and, as we shall presently see, into Indiana. Up to 1897

(45) Report of C. J. Norwood, Mine Inspector of Kentucky, 1895.

there were a few isolated prosecutions and convictions for using mineral oil in lamps (46) but since that time the Department in Ohio

(46) e. g. Report 1897 p. 139.

has generally been guilty of extreme laxity in enforcing the oil laws.

"In consequence of this, oil manufacturers began to take advantage,

and the specific gravity instead of being kept at 24 degrees as required by law, in some instances was found to be as high as 30 degrees. Yet notwithstanding the extraordinary flame and soot-fishing i.e. suffocating smoke from their lamps resulting from this high gravity, the miners were still dissatisfied and it was found that they would purchase a half gallon each of light carbon oil, and what was sold for miner's lard oil, mixing the two together for illuminating purposes in the mines." (47) In February, 1905, and again

(47) Ohio Mining Report, for 1905 p. 22.

in January, 1906, the Chief Inspector attempted by issuing letters to manufacturers, dealers and consumers of miner's lard or cotton-seed oil; by resuming the work of testing; by conferring with dealers and by threatening and successfully prosecuting a number of habitual violators of the law, to revive what had become a dead letter. (48)

(48) Report of the Chief Inspector of Mines, 1905, pp. 21, 22. Ibid, 1906 p. 43.

Still to this day there is a very general dissatisfaction among miners as to the quality of oil sold them and wherever one goes among them he is apt to hear a characteristic bit of miner's humor comparing the illuminating oil to "black Jack" (axle grease).

Soon after the enactment of the first oil law in Ohio the State Inspector of the First district of Illinois recommended the passage of a law prohibiting the use of all oils for mine illuminating purposes that were under a fixed standard of excellence -- "similar to the law in Ohio." There, too, the deplorable effect on ventilation and, in addition, the objectionable smell resulting from the burning of poor grades of oil was learned from experience. There, too, a number of mines had resorted to the use of substitutes such as paraffine wax, and the workers in some of these said they would not return to cheap

oils. In short, the difficulty was quite parallel to that described in Ohio. And on April 30, 1895, the Ohio law of 1894 was adopted almost verbatim. A proviso was included, however, to save paraffine "that any material that is as free from smoke and bad odor and of equal merit as an illuminant as a pure animal or vegetable oil may be used at the pleasure of mine operators and miners." On May 11, 1901, two clauses were inserted in the law, making it the duty of the State Inspector of mines in the several districts of the State to make the inspection provided for before any such oil could be sold for use in any mine in the State. It is evident, however, from the complaint immediately raised by the mine inspectors that they had not been in the habit of making such frequent tests as the new law required. Thus the State Inspector of the Sixth District urged a change not only on the ground that the time required should be given to other matters concerning the condition of the mines but also that the test as required was after all unsatisfactory and that oil standing the test frequently gave off more smoke than oil not meeting the legal requirements. (49)

(49) Ill. Report, 1901.

Evidently the ingenuity of the compounder's chemists had entered into the make-up of the oil used in this section as well as of that used in Ohio. Two recommendations have been made by the inspection force on numerous occasions, neither of them acted on as yet: that a smoke test be substituted for the gravity test; (50) and that shipping sta-

(50) Ibid and also Walton Rutledge in an interview.

tions be established in the State to facilitate the work of testing all the oil. (51) The latter suggestion grows out of the fact that near-

(51) Ibid.

ly all merchants in mining localities sell miners' oil from supplies rarely exceeding one barrel at a time (because of Insurance Companies'

requirements), and as no two merchants receive oil at the same time, a literal enforcement would require a separate examination of each and every barrel used in the State.

Quite parallel with the experience of Illinois has been the story of miner's oil laws in Indiana. About 1895 the complaints of bad oil had reached such a point in that State that it was considered the most fertile cause of complaint in the Inspector's office. Beginning with the vague grumblings a few years earlier about "mixing oil with coal oil and rendering the air impure" the clamor against the adulterations became louder as Ohio through legislation on the subject drove its bad oil into the Indiana coal fields. In his report of 1895 the Indiana Inspector quoted the Ohio law at length and urged the passage of a similar act. His predecessor had already recommended an oil law, and a bill entitled "A Bill for an Act to Prevent the sale of Impure Miners' Oil Preventing the Use of the Same, fixing a penalty for the violation thereof and declaring an Emergency," had been introduced into the House of Representatives by the Representative of Clay County (52) in 1895. It had passed the House and in the Senate had been referred to the Committee on Mines and Mining. "This Committee," stated

(52) Mr. O'Brien, the author of several Mining bills.

the Inspector, as a fact, "was composed of members who with one exception had no personal experiences in coal mines, and they could not believe that miners or other employees in mines would deliberately injure their health for the sake of saving a few cents per month in the cost of illuminating oil." The bill had accordingly been killed in Committee. What was actually taking place in the mines, however, is

illustrated admirably in a little incident recorded by the Mine Inspector, which corroborates in a concrete manner the generalizations taken from the Ohio Mining Reports. A Miner whose brother had been forced to quit the mines because of asthma, was found working with his son in a cloud of smoke so thick that his light had the appearance of a blood-red danger signal. All of this smoke was coming from his lamp and that of his son. When the Inspector remonstrated with him for his folly he replied that there was no use for him to use good oil when others were using cheap oil. The inspector pointed out that the air was coming to them fresh from a fan. "Ay," he answered, "but this place winna last long, Then I may ha' to go on the air ahint the oother." In 1896 we find the recommendation for the oil law repeated. (53) In 1897 the bill providing for the

(53) Report 1896, Recommendation 5.

use of pure oil passed the House of Representatives, but it was too late to be acted upon in the Senate. (54) The miners had to wait

(54) Ibid. Page 299.

till March 3, 1899 for their coveted oil law. It, too, was a close copy of the Ohio law of 1894, differing only in the form of prosecution for violation provided. That this law did not give universal satisfaction in Indiana any more than in Ohio and Illinois may be gleaned from a statement in the report of the President of the Indiana Federation of Labor dated September, 1902: "Oil Law. In conformity with the instructions of the last session of the organization there has been prepared a bill governing the sale of oil for use in mines and providing for methods whereby the purity of oils may be ascertained." The Federation's Bill was not passed. The codification

of 1905 made only a few slight changes in the oil law. It raised the temperature at which the gravity tests were to be made to 70 degrees, possibly at the suggestion of some scientist. It omitted the inaccurately used phrase "in parallax" in speaking of errors in reading and it neglected to specify the particular make of hydrometer to be used, again possibly for scientific reasons. But it also omitted all reference to the test of oil below 45 degrees and made other ^{small} ~~minor~~ changes that are no doubt, due to carelessness. (55) Thus all

(55) e. g. "list" for "test" near beginning,
omission of "that" and "other" near end.

three States have with the minor qualifications already noted, practically one miners' oil law, and the uniformity has been brought about not only through imitation but also in self-defense, to protect the miners of one State against the rejected product of other States.

Before leaving the matter of ventilation, or more specifically the problem of preventing the defilement of the air, an instance or two not provided for in the laws will illustrate the wisdom of the Ohio "sound discretion" clause, at least, in this connection. Thus, the handling of mine fires so as to prevent their spreading in the air current or suffocating men and animals, and the difficult task of removing decaying animal or vegetable matter under some conditions in a sanitary manner, have taxed the resources of the Ohio Department at times to the utmost degree. "Fires originate from various causes such as gas blowers being carelessly ignited, paper and other combustible matter being left burning after a shot has been fired, the disarrangement and contact of live electric wires, spontaneous combustion, from bug dust, slack, bone-coal and sulphurous substances heated by accumulation in the damp mines. There is one very striking fact, that mine fires generally take place just after shooting time

at night or just after the miners have left the mine for the day, which strongly suggests the advisability that in all mines of importance there ought to be a responsible man to go through all the working places as quickly as the powder-smoke and circumstances and conditions will permit." (56) Incendiarism, too,

(56) Report of Chief Inspector of mines of Ohio, 1904, p. 24.

during the great and bitter Hocking Valley Strike of 1884 gave rise to a number of mine fires that have since been walled in and have broken out anew and been walled in again at the demand and under the supervision of the Chief Inspector after consulting with the Attorney-General. In making recommendations and demands for ventilation the Inspector must continually have the possibility of fires in mind. In 1897 after two fires, in which forty-two horses were lost and had been allowed to decay in the mines for some time, the unprecedented problem of how to dispose of them without requiring a strong air current that would carry with it a multitude of microbes through all parts of the mine and without any other unnecessary peril was referred by the Chief Inspector to the Secretary of the State Board of Health. After a careful consideration of the matter he recommended the use of chloride of lime applied in a solution of six or eight ounces of lime to one gallon of water (about half a bucket of chloride of lime to one barrel of water). The carcasses in one mine were thus easily disinfected, taken out on mine-cars and burned. In the other mine, however, the management without notice to the Department removed the dead animals to a vacant room where they were sealed up. It was said that the request of the Board of Health was ignored and that "the conduct of some persons engaged in the work was not becoming to the age in which we live." The

Inspector fearing that a squeeze breaking down the false work might some day allow the gases given off by decaying flesh to get into the mine, considered seriously the advisability of re-opening the vault and removing and burning the carcasses. (57)

(57) Report of the Chief Inspector of Mines in Ohio, 1897, pp. 50 to 53. For other instances see orders to stop using abandoned workings as a cesspool, Report of 1904, p. 23.

These cases are, of course, merely illustrations of the numerous incidental difficulties that may come up in connection with the problem of keeping an air supply wholesome, after its creation and circulation are provided for, - that is in the last and now the most important step in ventilation.

CHAPTER V.

The Interests of the Mine-workers:
The Safety of Working-places
and Machinery.

The second general division of laws intended to safeguard the mineworker against dangers to life, health and limb, consists of those clauses that deal with the duty of the operator to furnish a safe place and safe machinery for the employe's work. Here especial attention is paid to hoisting machinery in shaft openings, to timbering and other precautions for keeping the roof in a safe condition, and precautions with regard to steam boilers, and electricity.

The greatest specific danger peculiar to mine machinery is connected with hoisting apparatus. The chains and ropes used must be of suitable material, of sufficient length, and in good condition. Cage coverings, safety catches, safety brakes, gates and fencing around shafts, signaling tubes, indicators, gauges and safety valves, even the location of the shafts in relation to other objects, are made the subjects of laws in one or more of the States.

In all forms of the Ohio law including the present, it is provided that "an approved safety-catch and a sufficient cover overhead on all carriages used for lowering or hoisting persons and in the top of every shaft an approved safety gate -----and an adequate brake shall be attached to every machine used for lowering or raising persons in all shafts or slopes." (1) In 1886 by amalgamating a section (299 a)

(1) Sec. 10, 1874, Sec. 299 of the Revised Statutes.

passed in 1885 regarding steam boilers with this section a limitation of its scope was effected, perhaps unintentionally, so that it does not apply to any shaft or slope until the work

of development and shipment of coal be commenced. The earlier forms of the law had included "also an approved safety-spring on the top of every slope," but this clause was a dead letter from the start (2) and in 1884 it was removed. The outlook

(2) Report of the Mine Inspector of Ohio,
(Andrew Roy) 1874.

for the enforcement of the section requiring safety-catches on cages in Ohio was poor in the beginning; only one shaft in the State had complied in advance; their introduction was handicapped by the unsuccessful experience of mine-owners in eastern Ohio who had tried them and thrown them aside; and the enforcement of their use was made improbable by the fact that the first Inspector did not believe in them. When the law was under contemplation he had declared: "Many of the most experienced colliery managers of England and on the continent of Europe, have, for the reason that in fast winding these catches sometimes catch and introduce a new source of danger, discontinued their use, and it is also urged that they induce neglect of proper inspection of ropes, and that it is {safer} to trust to good hoisting materials, than to any catch yet invented." Accordingly we find evidence cropping out here and there in the early days of the law that safety-catches (and similar safety appliances) were not being used according to law. Attempts were made to shift the blame on some defect in the law. (3) Gradually they were added, however, except

(3) Report of Chief Inspector of Mines in
Ohio, 1881.

where the impression had gained ground through the negligence of the inspecting force that if the second opening of a mine

had some ready means of ingress and egress the law did not require safety-catches on cages at the main hoisting shaft. In 1906 the Department took this matter up, at first by means of argument and then by appealing to the courts for restraining orders enjoining mines from operation until the law should be complied with. It is now able to report substantial enforcement of the section. Since 1885, an average of ten safety-catches a year have been added, the number gradually increasing until in the last five years reported (1902-1906), the average number a year was nineteen.

The law of 1885 already referred to provided that from and after May 1, 1885, no boiler used for generating steam and no hopper, or other inflammable structure for the preparation or dumpage of coal should be erected nearer than one hundred feet to the mouth of any shaft or slope. When this provision was put into its present place (Section 299) it was changed to read "the boilers used for generating steam, and the building containing the boilers shall not be nearer than 60 ft. to any shaft or slope, or to any building or inflammable structure connecting with or surrounding said shaft or slope."

The safe-guarding of other machinery and appliances in Ohio and the insulation of electric wires is left entirely to the discretion of the Inspector. For the last few years the Reports of the Ohio Department of Mining have contained articles on electric wires, the dangers they involve both of electrocuting men in the small passage-ways, and of igniting standing gas. During 1905, six, and during 1906, ten, deaths resulted from coming into contact with live wires, making this

cause of casualties second only to "falls of roof," "Electricity," says the report of 1906, "is in general use at the mines as a motive power and over seventy-six percent. of the coal produced in the State is mined by machinery. (4) Yet

(4) In 1906 there were 1110 electric and 156 compressed air machines and 275 haulage motors operating in the mines of Ohio.

there is not a word in the statute law that contemplates the use of electricity or mining machines in the mines, much less making any provision to regulate their operation." When the Mine Inspectors attempt to exercise their discretionary power they are often reminded that no law gives an inspector any authority to interfere. (5)

(5) Report of the Chief Inspector of Mines, 1906, p. 8.

The Illinois law, like that of Ohio, provides for numerous details in connection with hoisting machinery, a few as to boilers, and practically none as to other machinery or electrical appliances used in the mines. The absence of special regulations with regard to electricity and mining machinery in Illinois is not so striking as in Ohio, as machinery has but recently become a factor in the mining of Illinois. In 1900 there were but four hundred and thirty machines in use in the State and the number had increased only to seven hundred and eighty-four in the next six years. Only a small percentage of the shipping mines used electricity in their hauling up to 1905. In that year, which recorded an unusually heavy increase, the percentage was 4.79 percent. (6) In the other

(6) Report of the Illinois Bureau of Labor Statistics 1905, p. 67 and p. 98. In 1906 the number of mining machines had increased from 784 to 962, and the number of mines using electricity for hauling from 19 to 34.

matters however the Illinois law is even more detailed than the Ohio counterpart. Section Two provides among other things for gates at the top of shafts and at all landings to prevent either men or materials from falling into the shaft. The nucleus of this section goes back to Section Eight of the oldest form of the law. In 1885 it was extended so as to apply to every intermediate working vein as well as to the tops of the shafts and in the codification of 1899 was given its present form.

The general equipment of every hoisting shaft was provided for in Section Six of the original law, and though frequently amended (1879, 1883, 1887) its essential provisions are embodied in the first part of the paragraph on general equipment of the present law: "Every hoisting shaft must be equipped with substantial cages fitted to guide-rails running from the top to the bottom. Said cages must be safely constructed; they must be furnished with suitable boiler-iron covers to protect persons riding thereon from falling objects; they must be equipped with safety catches." In addition to the older provisions, the present law requires that "every cage on which persons are carried must be fitted up with iron bars or rings in proper place and sufficient number to furnish a secure handhold for every person permitted to ride thereon. At the top landing, cage-supports, where necessary, must be carefully set and adjusted so as to act automatically and securely hold the cages when at rest." The rest of the provisions with regard

to hoisting machinery and the engines and boilers connected therewith are contained in Section Four most of which was newly written in 1899, or liberally developed on the scanty basis provided in Sections Six and Eight in the law of 1899. Taking its provisions in order, we find that like the Ohio law it prohibits placing any boiler house nearer than sixty feet to the main shaft or opening, or to any building or inflammable structure connected therewith. It also requires that boiler houses be substantially fire proof. Every hoisting engine must be provided with a good and sufficient brake on the drum, so adjusted that it may be operated by the engineer without leaving his post at the levers. Flanges must be attached to the sides of the drum of any engine used for hoisting men, with a clearance of not less than four inches when the whole rope is wound on the drum. The ends of the hoisting cables must be well secured on the drum, and at least two and a half laps of the same must remain on the drum when the cage is at rest at the lowest caging place in the shaft. An index dial or indicator, to show at all times the true position of the cages in the shaft, must be attached to every hoisting engine for the constant information and guidance of the engineer. This last provision was devised to displace the old method of marking the rope, of which the Inspector of La Salle County declared emphatically as early as 1882: "{It} needs only to be understood to be condemned when a few dollars would procure a safe and easily adopted indicator." The same principle applies to steam gauges. The condition preceding the passage of the law on this matter is illustrated by the fact that when

examinations for engineers were introduced but few of the candidates seemed to understand how to read the pressure indicated on the gauge, and to this day the answers to questions as to what to do when the gauge records such and such a pressure show the wildest guessing and suggest that in practice the gauges are not always seriously regarded. Indeed it is said that some of the mine hands, the nature of whose work would presuppose a familiarity with the laws of pressure haven't the slightest idea of that the gauge is there for. (7) Nevertheless the law

(7) Based on a conversation with Hoisting Engineer Martin Lindskey of Streator, Ill., member of the State Mining Board.

requires that two such gauges be placed in such positions that both the engineer and fireman can readily see what pressure is being carried, and that these gauges be kept in good order and adjusted, and be tested as often at least as every six months. Lastly, every boiler or battery of boilers must be provided with a safety valve of sufficient area for the escape of steam, and with weights and springs properly adjusted. The boilers themselves are to be kept in good repair. To enforce this and some of the other provisions in the section, rules of discipline and extensive administrative provisions besides those already suggested are, as we shall see, provided, because in Illinois where most of the important shafts are twice as deep as the deepest in Ohio, the dangers of hoisting are fully realized.

In Indiana, too, several sections of the law (Sections 4, 5, 6, 7) are devoted to provisions for the safety of machinery and here again hoisting machinery receives most of the attention. Let us take the subjects in the order in which they occur--

ropes, covers, safety-springs, safety-catches, drum-brakes and indicators. "The rope used for hoisting and lowering in every mine shall be a wire rope and it shall be securely fastened to the shaft of the drum where two separate ropes are used and at least one whole lap shall remain on the drum when the cage is at rest on the lowest caging place in the mine." This clause was not in the original law. In 1881 and again in 1883 it was pointed out that some hemp ropes were still in use for hoisting purposes. "The law should be so framed," said the Inspector, "as not to allow their use for such purposes at coal mines. One cannot judge of the strength of {hemp} ropes nor of chains easily. The law should require wire ropes." The Inspector threw out a further suggestion that steel wire is the best. In 1883 the General Assembly provided "that the rope used for hoisting and lowering in every coal mine shall be a wire rope." The rest of the clause quoted above dates from 1905. A cover of one quarter inch boiler plate overhead is required on all carriages or cages used for lowering or hoisting persons in and out of the mines and on the top of every shaft an improved safety gate; also, an approved safety-spring on the top of every slope. These provisions can be traced back through all the revisions to the original law where they are substantially the same as in the codification of 1905. Just why safety-springs in slopes are required in Indiana thirty-one years after their requirement was declared a dead letter in Ohio is hard to see, at least in view of the fact that the requirement has been taken very seriously; the Inspector's Reports fail to record the installation of any such apparatus among the "improvements" enumerated, (8) and they are not in

(8) Unfortunately, however, under that head the Indiana Reports speak of such improvements as reflect the general progress of the industry (as would naturally be expected in a Report that must be made to a Department of Natural Resources), rather than of improvements looking to the welfare of the miners. (Contrast the Ohio lists of "permanent" improvements regularly recorded: furnaces, fans, air-shafts; second openings, safety-catches, stairways, speaking tubes, ventilating baskets.) This negative evidence, however, has been somewhat strengthened by the fact that the only description of "safety-spring on the top of every slope" that I could obtain through correspondence with Indiana operators was "a block of wood put under a wheel of a car, if that's what you mean."

general use at the mines. The next clause of the law, that on safety-catches on cages dates back to 1885. Although the earlier laws had said nothing about them, the very first report of the Department suggested that safety-catches be included in the law "to save property" as well as life. (9) There seems to

(9) Page 8 of this Report refers to Woodville catches successfully used in Davies County, and page 28 to Jenkins catches in use in Evansville.

have been no difficulty in introducing catches of some kind but the Report of 1886 suggested that the experience of Ohio of the previous decade was being repeated in Indiana, for the Inspector recommended that the power to approve or reject the safety-catches in use be one of the discretionary powers connected with his office. It would seem that the use of the phrase "approved safety-catches" (Act of 1885 Section 5, Act of 1905 Section 4,) implied this power. The present law further provides, as in Illinois, for brakes on drums and for an indicator on hoisting apparatus in addition to any mark on the rope to show the hoisting engineer the position of any cage or load in the mine. These provisions were inherited from the original law (Section 11) through a

slightly revised wording of 1889-91.

From the same law and passing through the same stages comes the requirement to keep the top of every mine and the entrance therof securely fenced off by vertical or flat gates covering and protecting the mouth of such mine, and also that gates be hung at each vein other than the (lower) ~~lowest~~ one, so that at all times when coal is actually being placed on the cage or when empty cars are being taken off the cage, there shall be a barrier preventing anyone from falling into the shaft. Lastly the law of Indiana provides, in terms borrowed from the Ohio Statute, of 1885, but more stringent and comprehensive, that it shall be unlawful to erect any inflammable structure or building, or powder magazines so near the escape-way as to jeopardize the safety of the workmen in case of fire and that "no boiler-house shall be erected nearer than thirty-five feet of the mine opening". Like Illinois, Indiana relies principally on special rules of discipline supported by elaborate administrative provisions, to make its hoisting appliances as safe as possible. Like both of the other States, it leaves all of the questions pertaining to other machinery to the discretion of the inspector.

Perhaps even more important than the safety of hoisting apparatus is the safety of the mine roof. Though this subject has received less attention at the hands of law-makers than many comparatively unimportant matters, a glance at almost any classified list of the causes of fatalities will show that from 60 to 70% of these accidents are due to falls of roof. Thus in Ohio in 1905, 69.3% of the fatal accidents in the mines were due

to falls of roof and coal; in 1906, 63%; in Indiana 1905, the percentage of fatalities due to this cause was only 42.55 per cent, but in 1906, it rose again to nearly 64 percent. In Illinois the percentage of fatalities due to falling coal and rock for the year 1905 was 40.2 and the average for the eighteen years from 1888--1905 was 54.46 per cent. (10) The precautions

(10) Report Illinois Bureau of Labor Statistics 1905, p. 121, and of other States for years mentioned.

taken against these falls of slate and coal are of three kinds; requiring the miner to timber properly, the mine-boss to mark off wide enough pillars and the operator to supply sufficient timbers.

In 1881 a letter from a miner advocating the insertion of a clause on timbers in the law was received at the office of the Chief Inspector of Mines of Ohio. The Inspector in his report of that year seconded the recommendation of his correspondent even to the peculiar detail that the new clause should be inserted in Section 6871 of the Revised Statutes, the section on Penalties. And so it was in 1886. Thus we read alongside of a series of general penalties that have little or nothing to do with this subject, "The owner, agent or operator of every coal mine shall keep a supply of timber constantly on hand and shall deliver the same to the working place of the miner and no miner shall be hold responsible for accidents which may occur in mines where the provisions of this section have not been complied with by the owner, agent or operator thereof." The corresponding duty of the miner, properly a question of mine discipline, is also included here. Among those upon whom penalties are imposed.

is the "miner or other person employed in any mine governed by this statute who intentionally or wilfully refuses to securely prop the roof of any working place under his control." It is interesting to note that in spite of the crude form of this provision an inspector making an investigation for certain insurance companies was able to record some years later with regard to its enforcement in Ohio that "the statutory requirement regarding the supply of working places {was} strictly complied with and not waived as in other states." (11)

(11) Report of Edmund G. Arnot, 1896, cited above.

Illinois besides relying on its provisions for mine discipline and its general statement that it shall be unlawful for any miner, workman or other person "to do any wilfull act whereby the life or health of any person working in any mine or the security of the mine or the machinery thereof is endangered," carefully defines the duties of mine managers (in the place of operators) and miners in this matter. "He (the mine manager) shall always provide a sufficient supply of props, caps and timber delivered on the miners' cars at the usual place where demanded, as nearly as possible, in suitable lengths and dimensions for the securing of the roof by the miners, and it shall be the duty of the miner to properly prop and secure his place with materials provided therefor" (Section 16, a). The obligation of the operator in this matter was first defined in a clause inserted in Section 16 in 1885 which simply required him to have a sufficient supply of timber to be used as props and to send down all such props when required. In 1887 it was amended so as to require this timber to be "of sufficient length and dimensions

to be used as props and cap pieces." Still as if to make assurance doubly sure, the Illinois miners and operators repeat their mutual obligations with regard to timbering in their wage agreements and thus do away with any difficulty that may arise from the ambiguity of such phrases as "at the usual place when demanded." The present (1908) agreement includes the following paragraphs: "The scale of prices herein provided shall include, in ordinary conditions the work required to load coal and properly timber the working places in the mine, and the operator shall be required to furnish the necessary props and timber in rooms or working face. (12) If any miner shall fail to

(12) This is the customary provision contained in Section 16, in the Illinois Wage Scale. In 1900 it resembled the present law even more closely, providing that the operator be required to furnish the necessary timbers, "delivered in cars at the usual places in rooms."

properly timber, shoot, and care for his working place, and such failure has entailed falls of slate, rock and the like, the miner whose fault has occasioned such damage shall repair the same without compensation, and if such miner fails to repair such damage he may be discharged. Any dispute that may arise as to the responsibility, under this clause, shall be adjusted by the pit committee and mine foreman, etc. The above does not contemplate any change from the ordinary method of timbering by the miner for his own safety." These paragraphs like many others in the wage agreements are at once a commentary on and in practice an amendment to the timbering law of Illinois.

The timbering law of Indiana dates from March 6, 1885. At first it was found objectionable to both Inspectors and miners because as they thought it required the delivery of timbers only

"when selected". Their views are shown in the following recommendation made by the Inspector in 1885 and repeated the next year verbatim by the union men of the State: "That Section 3 of the act of the Fifty-fourth General Assembly, relative to mines and mining approved March 6, 1885, be amended by striking out the words 'when selected' making the section read as follows: 'Section 3. The owner, agent or operator of any coal mine shall keep a sufficient supply of timber at the mine so that the workmen, may, at all times, be able to properly secure the workings from caving in, and the agent, owner or operator shall deliver all props and timbers of proper lengths to the rooms of the workmen, when needed and required.'" The reason why the words "when selected" were objectionable was, of course, that they qualified the obligation of the operator not only as to time but also as to the meaning of the parenthetical phrase "of proper lengths;" that is, they shifted so to speak, the burden on the miners themselves. Although the words "when selected" were removed in 1893 and an elaborate provision made for a "timber blackboard" (see below), the Insurance report already quoted on this subject in Ohio says, "The system of timbering is supposed to be the same as in Ohio but the requirements are indifferently enforced." The "timber-board" is a black-board required near the mine entrance to be used by the miners for registering whatever timber they need for securing their working places, by writing their respective numbers, under the figures indicating the proper lengths of timber required. The provision of 1893 is in substance the same as the present law (Section 15). As in Illinois so in Indiana the wage scales

now bear upon and strengthen this section of the statute. It has been customary for some time to specify in the Block District (Paragraph 15) that "the miners agree to do all the propping in their rooms -----and if any props are loosened or displaced, thereby endangering the workmen, the miners agree to reset the same." In the Bituminous District, since 1901 the following section on the subject has been included: "Any miner knowing his place to be unsafe shall protect the same without delay and shall {may?} go into the mine for that purpose outside of regular hours and on idle days."

Scattered here and there in the law of Indiana are other provisions looking to keeping the condition of the roof safe. Thus the mine-boss is expected to "see that as the miners advance their excavations, all loose coal, slate and rock overhead are taken down or carefully secured against falling therein on the traveling and air-ways." (13) At one time (1885 to 1889 under Section 2

(13) See middle of Section 11, the ventilation Section, copied with the addition of the words "taken down or" from Section 19 of 1891.

of 1885) the Indiana law in connection with air courses that were required parallel to entries (until the rule of break-throughs was extended^{to entries}), provided that "a sufficient pillar of coal be left to secure the roof from falling on account of the weight of the superincumbent strata forming the roof over the coal." In general however the thickness of the pillar and the width of rooms and entries driven are matters that depend so much on local conditions (such as the kind of coal, the thickness of the seam, the nature of the stratum over the coal, the presence of irregularities, water and so on,) that they have been left to the parties interested to

be worked out in their contracts and to the direction of mine-bosses whose duties and qualifications are, in this respect, as we shall see, made subjects of further legislation.

A few miscellaneous provisions for the comfort of the mine-workers rather than for their absolute safety have from time to time been made in several of the States. The wash-house acts of Indiana and Illinois and the supplies for the care of the injured required at the mines in all three of the States are included here.

Wash-house bills were passed in Illinois in 1903 and in Indiana in 1907. The Illinois law has been declared unconstitutional on the ground of its being class legislation. Its provisions are nevertheless interesting, because in Indiana it is considered only a question of time by many till its similar law will be rejected in the courts. The Illinois Act required that every owner or operator of a coal mine in that State provide and maintain a wash-room at a convenient place at the top of each mine for the use of the miners and other employes of such mine; and that the wash-room shall be so arranged that such miners and other employes may hang therein their clothes for the purpose of drying the same. According to the verbal statement of the present Commissioner of Labor of Indiana (who was at one time District President of the Indiana District of the United Mine-Workers of America) the Indiana law on the subject did not originate in any demand of the miners themselves but rather in an effort of a newly elected representative from a mining county to give "the boys" a law they would appreciate. To free it from the objection of class legislation its terms have been made more general than those of its Illinois prototype; it applies not only to the owners, operators, lessees, superintendents of, or other

persons in charge of every coal mine or colliery," but also to those of "other places where laborers employed are surrounded by or affected by similar conditions" to those of employees in coal mines. The obligation is not absolute as it exists only upon the written request of twenty or more employees, or in the event that there are less than twenty men employed, then upon written request of one-third of the employees. The wash-house or wash-room for their use must be a building or room separate from the engine or boiler room, to be maintained in good order, properly lighted and heated, supplied with clean cold and warm water and all necessary facilities for persons to wash except soap and towels, and provided with suitable lockers for the safe-keeping of clothing. The object of providing such a room is that "the men may change their clothing before beginning work, and wash themselves and change their clothing after working." It is made the duty of the miners to take proper care of the room, and all its parts, appliances and fittings, or rather to refrain from injuring or destroying them, under a penalty similar to that imposed on the employer for failing to comply with the act.

In all three of these States there are now required certain provisions for the injured at or near the mine. These provisions are taken with more or less variation from Article XVIII. of the Bituminous Mining Laws of Pennsylvania of 1893. The Ohio Act, which was not passed until 1904, copies this article almost word by word changing only the numbers of men to be employed before the several parts of the act apply to a mine. "It shall be the duty of operators or superintendents," reads this act, "to keep at the mouth of drift, shaft or slope, where more than ten miners

are employed, or at such other place about the mine as shall be designated by the State or District Mine Inspector, a stretcher, properly constructed and a woolen blanket and a water-proof blanket in good condition, for use in carrying away any person who may be injured at the mine. Provided that where more than four hundred persons are employed, two stretchers and two woolen blankets and two water-proof blankets shall be kept, and in mines generating fire-damp a sufficient quantity of linseed or olive oil, bandages and linen shall be kept in store at the mine for use in emergency and bandages shall be kept at all mines."

The corresponding Illinois law has been on the Statute Books since 1899. It differs from the Ohio law chiefly in the numbers specified and in its diction. "At every mine" reads Section 30 of this law, "where fifty men are employed underground, it shall be the duty of the operator thereof to keep always on hand, and at some readily accessible place, a properly constructed stretcher, a woolen and water-proof blanket, and a roll of bandages in good condition and ready for immediate use for binding, covering and carrying any one who may be injured at the mine. When two hundred or more men are employed in any mine, two stretchers and two woolen and two water-proof blankets, with a corresponding supply of bandages, shall be provided and kept on hand. At mines where fire-damp is generated there shall also be provided and kept in store a suitable supply of linseed or olive oil, for use in case men are burned by an explosion."

The Indiana law, passed in 1905, appears from its wording to be copied from the Illinois law, but it is greatly condensed, strengthened and improved. "At every mine where ten or more men

are employed inside, it shall be the duty of the operator thereof to keep always on hand, readily accessible and near the mouth of the mine, a properly constructed and comfortable stretcher, a woolen and waterproof blanket; a roll of bandages in good condition for immediate use for bandaging and dressing wounds of any one injured in such mine; a supply of linseed oil, lime, camphor, turpentine, antiseptic gauze, dressing and surgeon's splints for the dressing of broken bones; also to provide comfortable apartment near the mouth of the mine, in which any one so injured may rest while awaiting transportation to his home, and to provide for the speedy transportation of any one injured in such mine to his home." (14)

(14) In *Jushman v. Mining Co.* 83 N. E. 390, (Ap. Court Indiana, 1908) on the basis of this act, it was decided that it cannot be said as a matter of law "that the President of a Corporation operating a coal mine has no power to employ a surgeon when necessary to save a life of an injured employee."

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CHAPTER VI.

The Interests of the Mine-workers:

The Accessibility of Working-places.

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The requirement of two openings under certain conditions is a primary feature of most mining laws. This feature they all take, directly or indirectly, from the law of England that was passed ~~now~~ after the disaster at the Hartley Colliery. According to that law every mine must have two shafts or outlets in communication with every seam at work; they must be capable of affording distinct means of ingress and egress to the persons employed in the seam; they need not belong to the same mine; must be separated by natural strata ~~of~~ not less than ten feet in breadth and connected by a passage not less than four feet wide and three feet high. At each of the shafts or outlets or on the works belonging to the mine there must be kept for raising or lowering persons proper apparatus in actual use or available for use within a reasonable time. The rule does not apply to the case of a new mine being opened for the purpose of searching for or proving minerals so long as not more than twenty persons are employed below ground at any one time in the whole of the different seams in connection with the shaft. Nor does it apply to any working for the purpose of making communication between two or more shafts, under similar conditions, nor to mines temporarily or permanently exempted by the Secretary of State in accordance with certain special rules. (1)

- (1) Abstract of British Mining Law of 1872, Section 38, 39, 40, 74.

Most of these provisions were included in the first Ohio Law and have remaind^e on the Statute^s books to this day. Thus Section 297 of the Revised Statutes begins: "It is unlawful for the owner or agent of any coal mine, worked by shaft, to employ or permit any person to work therein, unless there are, to every seam of coal worked

in each mine, at least two separate outlets, separated by natural strata of not less than one hundred feet in breadth, by which shafts or outlets distinct means of ingress and egress are always available to the persons employed in the mine, but it is not necessary for the two outlets to belong to the same mine if the persons employed therein have safe, ready and available means of ingress and egress by not less than two openings." This sentence which was formed out of Section Eight of the law of 1874, by omitting the clause, "wherein over fifteen thousand square yards have been excavated", it has been well said, would close every shaft mine in the State before it was opened. (2)

(2) Report of the Chief Ins. of Mines--
Ohio, 1892.

But as interpreted by the Attorney-General in 1892 in the light of what follow^d it not only permits operators to continue with twenty men until they can be sure of the quantity and quality of the coal within their rights, but leaves to the discretion of the Chief Inspector the whole question of how much time should be given an operator to work with twenty men to make a connection between the two outlets or ^{with} a second opening. That is to say, this section does not apply to a new mine in the process of opening so long as not more than twenty persons are employed at any one time in the mine, nor does it apply to any mine in which the second outlet has been rendered unavailable by reason of the final "robbing" of pillars previous to abandonment so long as not more than twenty persons are employed in it at any one time. This exemption, like the other, is taken from the English law, being based on one of the conditions that was to control the Secretary of State. In all cases where there

is no second outlet the cage or cages and other means of egress must at all time be available for persons employed and as some difficulty arose from time to time regarding the meaning of "two separate outlets" it became necessary to make the law more specific; first, by inserting a clause regarding the equipment of the second outlet and its availability at all times; (3)

- (3) "The escapement shaft shall be fitted with safe and available appliances by which the persons employed in the mine may readily escape in case an accident occurs deranging the hoisting machinery at the main outlets, and such means or appliances for escape shall always be kept in a safe condition." (1886).

and later by distinguishing between an air-shaft with a ventilating furnace at the bottom and an escapement shaft within the meaning of this section. (4) The rest of the section in all

- (4) Recommended by the Chief Inspector in 1887,
Passed 1888.

of the stages of its development extends the "two openings" requirement to slope and drift mines or rather to those in which more than ten persons are at work after twelve months after shipment of coal has commenced, in the present form of the law; originally, to all *slopes and drifts* after twelve months after fifteen thousand square yards had been excavated. Finally, provision is made for cases in which the operator does not own suitable ground through which to make the second entry, but this provision can best be understood in connection with section of the law dealing with property rights.

The distinction between the requirements for shaft mines and those for slopes and drifts seems to have given rise to some misunderstandings regarding the meaning of the law, which resulted in course of time in a great deal of laxity in its enforcement. "During

the summer and fall of the year 1904," says the present Chief Inspector, "we discovered that quite a number of mines in the State, both shaft and drift, were being operated with an unlimited number of miners without being provided with a second opening or escapement way as required by Section 297 of the mining laws, and that there was a general misconception or misinterpretation of that section of the law. Many operators assumed the position that shaft mines with but one opening could be operated indefinitely if not more than twenty miners were employed at any one time, and that there was no law to restrict the number of miners employed at any one time until a mine had been in operation at least one year after the first shipment of coal, that time being allowed to provide a second opening. This view also having been held by many of the Inspectors, from time to time, there did not seem to ever have been any very definite action taken by the Department on that point, and in consequence, we deemed it advisable to have the opinion of the Attorney-General of the State." (5) This opinion differed

(5) Report of the Chief Inspector of Mines, 1905, p. 35.

slightly from the earlier opinion already cited. While it recognized the right of employers to work less than twenty men for the purpose of making communications between openings for an indefinite length of time it ruled such employment for the general production of coal unlawful. (6)

(6) Ibid. p. 20.

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The Department after waiting until the busy winter season was passed issued orders for the strict enforcement of the law as interpreted notwithstanding the opposition of many who had been permitted to operate

their mines for a long time without an escapement way. As a result during the year 1905 one hundred and twenty-one and during 1906 eighty "second openings" were made, as compared with an average of less than forty a year for the nineteen years immediately preceding that time. (7)

(7) Cf. Tables in Report for 1906, p. 140.

While the law may be said to be enforced rather strictly to-day still it is doubtful whether its purpose is accomplished in all cases. As we found in connection with ventilation, many mines in Ohio are being worked by machinery to an extent that so far exceeds their original pick capacity contemplated when they were opened that their modernized shafts are in a hustle and hurry all day. "The speed at which men are hoisted and lowered and the possibility of cages breaking or catching on shaft timbers, or of employees being injured in getting on and off cages is becoming a matter of much serious thought and concern." (8) A few of the better equipped shafts are adding

(8) Report of the Chief Inspector of Mines, 1906, p.40.

separate wooden elevators for employees and it is probable that either through an exercise of the discretionary power of the Inspector, or by direct legislation two independent means of ingress and egress besides the main hoisting shaft, at least where large skeleton iron self-dumping cages and first motion hoisting engines are in use, will be required.

Very similar provisions are included, and have been from the beginning in the third section of the mining law of Illinois; two places of egress are required; it is unlawful to employ more than ten men until

the escapement shaft is completed; the distance from the main shaft is regulated; the escapement shaft must be properly equipped and available at all times and it need not be in the same mine as the main shaft. Although the law distinctly applies to every mine "whether worked by shaft, slope or drift" its terms and provisions contemplate primarily shaft mines. (9) Owing to the depth of many of the shafts

- (9) In 1905 Illinois had 604 shaft mines,
125 slopes, 249 drifts, and 7 strip
mines.

the requirement of a second outlet was looked upon as such a great hardship that at first considerable time was allowed for the completion of the second outlet. Originally it is true, the law said "two years when the depth is over five hundred feet, otherwise one year; but this was so manifestly unjust that in 1883 it was changed to read two hundred feet a year." In 1885 it was changed to "one year when such mine is under one hundred feet, two years when over one hundred feet and less than three hundred, and three years when over three hundred and less than four hundred, four years when over four hundred and five years when over five hundred feet deep" reckoned from the first day of July 1879. In 1887 it was again changed to "one year for two hundred feet or less and one additional year or pro rata portion thereof for every additional 200 feet or fraction thereof reckoned from the date on which coal is first hoisted from the original shaft for sale or use." The present law allows in view of the improved facilities for sinking shafts only "three months for two hundred feet or less, six months for less than five hundred and more than two hundred and nine months for all other mines", dating from the hoisting of coal from the main shaft. Instead of the twenty men permitted to work in the meantime at any one time in the older British law and in the Ohio law, only ten men at any one time

or as many less as in the judgment of the Inspector are enough for speedily completing the connection with the escape-shaft or adjacent mine may be employed for this purpose. Instead of the hundred feet of natural strata that must separate the two outlets in Ohio, three hundred feet or as much more or less as may be agreed upon by the Inspector of the District and the owner of the property, must separate the escapement shaft from the main shaft. (10)

(10) Taken from Act of 1887, Section 5, c.

^{No} inflammable structure may be erected on the surface in the space between the two shafts nor "powder magazine in such location or manner as to jeopardize a free and safe exit by the escapement shaft in case of fire in the main shaft buildings." Either good substantial stairways set at an angle not greater than forty-five degrees and provided with hand-rails or platforms at each turn, or, in the case of mines already possessing them (and no other according to the strict letter of the law), cages arranged and equipped like cages in the main shaft, with indicator, drumbrake, steel or iron cable and safety-catches are required. Such cages must be suspended between guides, must be protected against dangers of falling objects and must be operated by a steam hoisting engine available for use at all times. No obstruction, nor steam, nor heated or vitiated air, nor water shall be permitted to interfere with its availability at any time. All of these provisions were given practically their present form in 1887, excepting that the substitution of hoisting apparatus for stair-ways was then clearly optional in all cases. (11)

Prior to

(11) In practice Section 5 f. seems to be liberally interpreted in the same way to-day by taking the expression "and such means" as merely introducing one possible example, the staircase, and not excluding others. See however Indiana's new law below.

the law of 1887, though the law was complied with even at great cost
(12) still the time allowed was looked upon as too long to

(12) See for example Coal Report, Illinois Bureau
Labor Statistics 1882, Woodford County and
elsewhere.

insure the safety of a large number of miners. The Bureau in 1886 expressed the hope "that the time is not far distant when the State will require all persons about to develop coal mines to sink two shafts simultaneously and to make underground connection at once before proceeding to lay out works." This hope was partially realized in 1887 when the law provided that it be the duty of Inspectors of mines to see that all escapement shafts were begun in time to secure their completion in the period specified. It is more fully realized to-day by the limited time allowed for the completion of the connections or the second outlet and by the limitation of the number of men to be employed in the meantime. As in Ohio we shall find here, too, certain rights bestowed upon the operator to ^{the} use of adjoining property when necessary for the carrying out of the law and a number of auxiliary provisions calculated to insure the enforcement of the laws.

The provisions of the first Indiana law with regard to outlets, resemble both in phraseology and provisions, the early Ohio law with its limitation to mines wherein fifteen thousand square yards had been excavated, its specification that a hundred feet of strata be left between the two outlets; the "distinct means of ingress and egress, always available for persons employed in the mine," "required in the second outlet, and its provision that both outlets need not belong to the same mine. In course of time the provisions of the law began to assume some of the features of the Illinois act, especially after the extensive revision that took place in the latter State in 1887.

Criticism of the section began early. Two years after it was passed the Inspector began to ask about the accessories necessary to make a shaft, "an escapement shaft." He also pointed out that an operator under this section, could crowd as many men into a mine as he pleased provided he had not excavated fifteen thousand square yards. "The law ought to read that it shall not be lawful to employ more than ten persons unless an escapement shaft is sunk. The effect of this would be to have our mines opened in a more systematic manner." Furthermore, rather than making a certain space the criterion, a distance of say one hundred feet from the main shaft was suggested to be considered in the codification of the statutes planned for the next General Assembly. As this suggestion was not heeded, however, the Inspector in 1884 suggested that if a space be retained as the criterion it should at least be a reasonable one, and that five thousand square yards be substituted for fifteen thousand square yards. This change was made in accordance with the suggestion, and the phrase "after five thousand square yards have been excavated is included in the law to this day. It was also noticed at a very early date, that Section 2, taken in connection with Section 8, which provided for ventilation, and prohibited the placing of a furnace at the bottom of a shaft over which the hoisting apparatus and buildings were built, would render it necessary to have three openings unless built in a certain way, and even then Section 8 would have to be slightly changed. Efforts were made to induce the legislature to look upon the furnace shaft as meeting the requirements of the second opening if a stairway or ladder were placed therein. Nevertheless the section prohibiting the use of a compartment into which a hot up-cast of air is discharged as an escapeway is still on the Statute Books of Indiana just as of

the other States. The law of 1885, to meet a suggestion of the Inspector mentioned above that the accessories necessary in an escapement shaft be designated, required that staircases be placed in all such shafts or "man-ways," as they were then called. The next year the Inspector called attention to the fact that an injustice would be done to many operators if the law were strictly enforced, and he recommended (Recommendation 7) that no staircase be required in escape-shafts in mines two hundred feet deep, provided there be other appliances at hand that could be utilized at any time. This recommendation, however, was not acted upon until 1897, when the following proviso was inserted: "Provided that where such shaft shall be more than 150 ft. deep, the operator, owner, or agent may elect to provide at such outlet or man-way a hoisting apparatus which shall be at all times available to miners and other employees of the mine, the same signals to be used as provided by law for use at hoisting shafts." In the codification of 1905, even the restriction "where such shaft shall be more than one hundred and fifty feet deep" is eliminated and though at first reading the section seems ambiguous, with a knowledge of its history, its meaning becomes clear that either stair-case or hoisting apparatus at the option of the operator will satisfy the requirements of the law. By a supplementary section approved in 1907, however, the matter has again become complicated and a condition prima facie similar to that described in Illinois has been created. The provisions of the Act of 1907, *as* we have seen in another connection are cumulative of all laws on the subject of coal mining" and only such laws as are in conflict therewith, are repealed. Is the proviso that hoisting apparatus may be substituted for a

stairway, in conflict with the provision "that at all coal mines where any escape-way or man-way is hereafter constructed, the same shall be provided with a good and sufficient stair-way according to the specification for mine stair-ways now provided by law and of suitable design and strength to accomplish the purpose for which it is intended?" One possible reason for insisting on a staircase is that when power is supplied to two hoisting shafts from the same source and that source is interfered with, a mine may be left without any means of egress. On the other hand the practical difficulties connected with a stair-way in a narrow shaft several hundred feet deep, have been recognized not only in the Indiana proviso of 1897 but also in the laws of other States, (13)

- (13) For example Pennsylvania permits hoisting machinery to be substituted for stair-ways when a shaft exceeds 75 ft. in depths.
(Bituminous Mining Law of Pennsylvania Article II Section 6, 1893)

and if the law is not as liberally interpreted as its prototype in Illinois seems to be, it is probable that Indiana will some day have to reinsert the old proviso. The Illinois clause which makes it unlawful to erect any inflammable structure or building or powder magazine, on the surface so near the escape-way as to jeopardize the workmen in case of fire has been added to the law of Indiana (1905), as has also a provisions of the Illinois law regarding one of the obstructions to be anticipated in such shafts: "Water coming from the surface or out of the strata shall be conducted by rings or otherwise to prevent it from falling down the shaft and wetting the persons ascending or descending." Nothing is said as to the rights of owners to enter mines of others to facilitate the making of the second opening and but little provision is made for the enforcement of ^{any part of} this section.

The provisions touching upon passage-ways in the several

States embrace passage-ways around the bottom of the hoisting shaft, those connecting with the escapement shaft and road-ways used for hauling. In general, road-ways must be kept clear and in certain cases provided with sign-boards and shelter-holes.

In Ohio these provisions are embodied in a section (299 R. S.) the application of which is limited to shafts and slopes after the work of development and shipment of coal has commenced. It requires "in every shaft a traveling or passage-way from one side of a shaft bottom to the other so that persons working therein may not have to pass under descending cages." All slopes or engine-planes used as traveling ways by persons in any mine must be made of sufficient width to permit persons to pass moving cars with safety; but if it is found impracticable to make any slope or engine-plane of sufficient width then safety-holes of ample dimensions and not more than sixty feet apart must be made on one side of the slope or engine-plane. (14)

(14) Strictly "engine-plane" does not include electric haulage roads but the Inspector has the power of extending the rule so as to include such roads.

Such safety-holes must always be kept free from obstruction and the roof and sides must be made secure. The passage way around the bottom of the shaft was provided for in 1884. The provision for safety-holes and slopes was recommended the very first year that an Inspector was appointed. (15) It was repeated in 1877

(15) Report of Mine Inspector 1874.

and again in 1881. In that year a document already referred to expressed the miners' wish to have refuge holes at least four feet square cut every twenty yards in such slopes and white-washed once a year. (16) The present substitute for this

(16) Letter of J. Brown representing the miners' side, printed in Ohio Mining Report of 1881.

recommendation was passed in 1885. That its purpose is not fully accomplished is testified to by miners generally, by the number of accidents attributed to mine cars (17) and occasionally by an of-

(17) In 1906 these numbers for Ohio where 8 fatal accidents, 106 serious, and 49 minor. In 1905 there were 13 fatal, 129 serious and 55 minor. 25.1% of all the accidents reported in Ohio from 1888 to 1906 were due to mine cars.

ficial record. "There are a number of entries," says one of the Inspectors of Ohio in 1906, "on which men are required to travel, that have no man-holes for them to climb into when motors are approaching." (18) With our modern rapid haulage system in

(18) Report of Chief Inspector of Mines. Ohio 1906, Page 349.

narrow entries obstructed with pipes, trolley-wires, feed-wires and tracks, it is obvious that the importance of safety-holes is greater than ever before on horizontal roads as well as slopes and it is to be hoped that a rigid enforcement of the provision will soon be effected.

The Illinois law provides for a passage-way around the bottom of the main shaft, for passage-ways to the escapement and for safety-holes in haulage ways. "At the bottom of every shaft and at every caging place therein," reads one paragraph of the law, "a safe and commodious passage-way must be cut around said landing place to serve as a traveling way by which men or animals may pass from one side of the shaft to the other without passing under or on the cage." (Sec. 2 b.) In an earlier form of the law (1887) the section from which this clause is taken (Section 8 b) had continued

"all sumps (swampy places) shall be securely plankd over so as to prevent accidents to men." More attention is paid by the law to the passage-way leading to the escapement shaft than to ordinary passage-ways because such a way, especially if it connects two mines, is apt to be neglected and to become obstructed as a result of disuse (see Section 16 c). The escapement shaft or opening for communication with a contiguous mine must be directly available to men in every seam of coal worked in a mine, and all passage-ways communicating with the escapement shaft or place of exit must be maintained free of obstruction. At first the dimensions of such a passage-way were to be two and one-half feet high and four feet wide (till 1883); later (1885) three and one-half feet high and five feet wide; and finally (1887) five feet each way. The passage-ways must be so graded and drained as to make it impossible for water to accumulate in any depression or dip in quantities sufficient to obstruct the free and safe passage of men. Sign-boards to show how to reach the exit must be placed at all points where the passage-way to the escapement shaft or other place of exit is intersected by other roadways or entries. Lastly, after such a passage-way has been made to an adjacent mine in accordance with the provisions of the statute, the intervening door must remain unlocked and ready at all times for immediate use, and such passage cannot be closed without the consent of both operators. Hauling roads, the third class of passage-ways receiving the attention of the law, are divided into two classes, with slightly different provisions for each: those on which hauling is done by machinery; and those on which it is done by draft animals. The first class corresponds to "the slopes or engine-planes" of the

Ohio law which the persons employed in the mine must use while performing their work or upon which they must travel on foot to and from their work. On roads of this class, "places of refuge must be cut in the side wall not less than three feet in depth and four feet wide and five feet in height and not more than twenty feet apart, unless there is a clear space of at least three feet between the side of the car and the side of the road, which space shall be deemed sufficient for the safe passage of men." Two of these details, the specification of a height of five feet and the including of places which men use while performing their work (as well as traveling ways proper) were added in the amendment of May 25, 1907. The rest of the law goes back to 1899 when a few of the unnecessary hardships of an older rule were removed. At one time (1887) safety -holes were required to be not less than six feet in width and six feet in depth; they were also to be distinguished from the surrounding walls by being white-washed or in some other manner. The main portion of the provision goes back to the earliest forms of the law (Section 8). The paragraph on mule-roads is a later importation into the law. It provides for smaller manholes or places of refuge (two and one-half feet deep, four feet wide and five feet high), except where there is a clear space between the car and the rib or where rooms are driven at regular intervals not exceeding twenty yards. The amendment of 1907 added details to this paragraph similar to those added to the paragraph on engine-planes. The concluding clause requires that all places of refuge must be kept clear of obstructions of all kinds. (19)

- (19) 8.61 per cent, of the fatal accidents in Illinois during the eighteen years 1888-1905 were due to the pit-cars. In one year (1904) twenty-one deaths, or 13.37 percent. of the total were attributable to them.

Indiana, too, provides for passage-ways around the hoisting shafts, unobstructed roads to exits and safety-holes on hauling roads. Section 11 of the original law provided that traveling ways be cut at the bottom of the hoisting shaft sufficiently high and wide to enable persons to pass the same in going from one side to the other, without passing over or under the cage. As this section set no limit as to distance from the shaft it was easily evaded in many cases by having such a manway some fifteen yards away, thus, as one Inspector pointed out, "making it a moral certainty that the men in their work will pass over and under cages." In 1886 this Inspector recommended that the Section specify that the entrance to such passage-ways should not be more than three yards from the bottom on either side of the shaft. This method of evading the law has not been recorded in the other States although their provisions are hardly more specific than those of Indiana. As the recommendation has not been acted on in Indiana nor urged for some time from official sources, it is probable that the evasion was but a temporary makoshift. As in Illinois, especial attention is given to the traveling roads and gang-ways leading to the escape-way. In 1896 the Inspector recommended (Recommendation 1) that better provision for such roads be made. According to the present Indiana law these roads must be separated from the hoisting shaft by at least one hundred feet of natural strata, they must be at least four feet in height and in width, and must be kept as free from water as the average haulage-roads in such mines. The law continues in 1905, in words borrowed from the Illinois statutes: "At all points where the passage-way to the escapement shaft, or other place of exit, is intersected by other roadways or entries conspicuous boards shall be placed indicating the direction it is

necessary to take in order to reach such a place of exit." The development of the last feature of the law of passage-ways, safety-holes, was very late in Indiana. In 1899 the Inspector wrote (Recommendation 8): "In many places in nearly all the mines there are long stretches of ontry so narrow that a person cannot stand at the side of the track and let a trip of cars pass him. These narrow places frequently occur on grades, where the cars run at a high rate of speed. Quite a number of accidents have occurred by men meeting trips of cars in such narrow places and being unable to get out of the way. Many accidents have been narrowly averted by such meetings. Niches in the coal, or man-ways at the side of the track, could be provided in such narrow places, at a comparatively small cost, giving immunity from danger to all persons passing along such entries; and I recommend that such legislation be enacted by the next legislature." A few years later the General Assembly accordingly copied Section 21 of the law of Illinois as it then read (prior to the amendments of 1907) with a few slight changes (in places indicated in the italics in the following quotation): "On all single track hauling roads wherever hauling is done by power, and on all gravity or inclined planes in mines, upon which the persons employed in the mine must travel on foot to and from their work, places of refuge must be provided in the side wall; not less than three feet in depth, measuring from side of car, and four feet wide, and not more than twenty yards apart unless there is a clear space of at least three feet between the side of the car and the side of the wall, which space shall be deemed sufficient for the safe passage of men. On all hauling roads in which the hauling is done by draft animals, whereon men have to pass to and from their work on

foot, places of refuge must be cut in the side wall at least two and one-half feet deep, measuring from the side of the car, and not more than twenty yards apart, but such places shall not be required in entries from which rooms are driven at regular intervals not exceeding twenty yards, and wherever there is a clear space of two and one-half feet between the car and the rib, such places shall be deemed sufficient for the safe passage of men. All places of refuge shall be kept clear of obstructions and no material shall be stored therein, excepting in cases of emergency, nor be allowed to accumulate therein." (21)

(21) The percentage of all the accidents reported in a year in Indiana that is usually due to "mine cars" fluctuates, but it is usually quite large. Thus in 1905 it was 14.34 percent.; in 1906, 21.46 per cent.

Alkin to the law of passageways are the clauses designed to prevent persons from losing their way in a mine by inadvertently entering abandoned workings. Occasionally we read of a miner being lost in this way, and, what is more remarkable, sometimes of his never being found in spite of the well-known characteristic unwillingness of miners under such circumstances to give up the search for their fellow miner dead or alive. (22) Ohio

(22) For a case in point, see Report of the Chief Inspector of Mines of Ohio, 1904 p. 178.

in this connection provides specifically that all underground entrances to any places not in actual course of working or extension shall be properly "fenced across the whole width of such entrances so as to prevent persons from inadvertently entering the same." (Added to Section on Ventilation, 298, 1886.) Even when no fence is

made the minors of Ohio are subject to a penalty for entering any part of a mine against caution (Sec. 6871).

Indiana not quite so specifically referring to underground abandoned parts of mines, simply requires the entrance of an abandoned mine to be securely fenced off, so that no injury can arise therefrom (Sec. 8). But when we remember that the term "mine" in the present Indiana law "includes the workings in every shaft slope or drift, which is used or has been used in the mining and removing of coal from and below the surface of the ground," the significance of the section is found to be the same as that of the Ohio clause. Before this definition was adopted the words "shaft or slope" were used instead of mine and then the Section was, of course, more limited in its scope.

There is no such provision for fencing off abandoned workings in Illinois. It is simply made unlawful for any miner to enter any part of the mine against caution and among the duties of the mine manager the giving of such cautions is included (23)

(23) Section 31, originally 15; Section 18 a, 1899, and same as amended 1905.

Along with the subject of roadways and guarding against men wandering into dangerous places, that of headlights and illumination of road-ways in general, is introduced in various ways in the statutes of two of the States. Thus in Illinois it is provided that a conspicuous light must be carried on the front car of every trip or train of pit cars moved by machinery except when such trip is on an inclined plane. (Sec. 21, a) It also provides that "whenever the hoisting or lowering of men occurs before daylight or after dark, or when the landing at which men take or leave the cage is at all obscured by steam or otherwise, there must always be

maintained at such landing a light sufficient to show the landing and surrounding objects distinctly. Likewise, as long as there are men underground in any mine, the operator shall maintain a good and sufficient light at the bottom of the shaft thereof, so that persons coming to the bottom may clearly discern the cage and objects in the vicinity." (Section 28 b) The act of 1887 had already provided the substance of this paragraph by calling for a sufficient light at the top and the bottom of the shaft to secure as far as possible the safety of persons getting on and off the cage. (Sec. 16 e.) Lastly this law provides for danger marks as notices to all men to keep out when working places are discovered in which accumulation of gases, recent falls or any dangerous conditions exist. (Sec. 18 b. 1899.)

The law of Indiana demands two lamps lighted at all times when miners are at work, except when electric lights are used, one on each side of the shaft not more than ten feet from said shaft in each vein where men get on or off cages. (24) No danger

(24) Sec. 8, 1889 - 91; included in Sec. 7 of 1905. signals are required although it is provided that no person shall enter any unsafe place that may be discovered, except for the purpose of making it safe, until it has been repaired to the approval of the mine boss, and he has given permission for the men to return to work.

Interwoven with the sections which we have been considering are provisions for ample means of communication through speaking tubes, bells, whistles or other means of signaling between the top and bottom of a shaft or the ends of a slope.

In the Ohio law of 1874, Section 10, which has since been developed into Section 299 of the Revised Statutes, opened with this clause: "The owner or agent of every coal mine operated by shaft or slope, in all cases where the human voice cannot be distinctly heard, shall forthwith provide and maintain a metal tube from the top to the bottom of such shaft or slope, suitably calculated for the free passage of sound therein, so that conversation may be held between persons at the bottom and top of the shaft or slope." Since 1884 the application of the clause has been limited to shaft mines only. Some little trouble was encountered in the early days of the law in enforcing this provision. The first Inspector tells of some cases in which one-inch pipes were put in and found incapable of carrying the human voice. In such cases he ordered larger pipes to be used until the purpose of the section was accomplished. (25) There is no provision in the

(25) Statement of Andrew Roy, Glen Roy, O.

Ohio law regarding signaling around the hoisting apparatus and yet it is customary in the Ohio mines, as in those of the other States, to blow a whistle or ring a bell, and even to post a code of signals, to indicate just what is to be done or is being done with the cage. (26)

(26) I observed this fact at several shafts which I visited in Jackson County where the Pennsylvania system of signaling or a part of it was used. (See Pa. Bit. Mining Laws, Art. XX, Rule 70) This system is said to be in general use in Ohio.

The Illinois law, while not providing for speaking tubes, makes elaborate provisions for signaling, similar to those in vogue in Pennsylvania. One section of the statute

(Section 23) is devoted entirely to the subject of signaling at mines operated by shaft and steam power. It formerly provided (1899, adopted from law of 1887) that means must be provided for communicating distinct and separate signals to and from the bottom man, top man, and engineer and stated what one, two, three and four bells from the bottom to the top, and what one and two bells from the top to the bottom should signify. Since 1905 it has specified that "the means of signaling to and from the bottom man, the top man, and the engineer, should consist of a tube, or tubes, or wire encased in wood or iron pipes, through which signals should be communicated by electricity, compressed air or other pneumatic devices or the ringing of a bell." The following signals developed from the ordinary practice of mines, are now provided by law for use at mines where signals are required:

"From the bottom to the top. One ring or whistle shall signify to hoist coal or the empty cage, and also to stop either when in motion.

"Two rings or whistles shall signify to lower cage.

"Three rings or whistles shall signify that the men are coming up: when return signal is received from the engineer, men will get on the cage and cages shall ring or whistle one to start.

"Four rings or whistles shall signify to hoist slowly, implying danger.

"Five rings or whistles shall signify accidents in the mine and a call for a stretcher.

"Six rings or whistle shall call for a reversal of the fan.

"From top to the bottom One ring or whistle shall signify:

All ready, get on cage.

"Two rings or whistles shall signify: Send away empty cage."

The right to add to this code of signals with the consent of the Inspector has been vested from the beginning in the manager or "the operator" (according to the definitions in vogue since 1899). But any code that may be established and in use at any mine must be conspicuously posted at the top and the bottom and in the engine room at some point in front of the engineer when standing at his post. (Section 23 and Section 4 f). The proper use of this signaling apparatus will appear among the duties of engineer, top-man and bottom-man. It is also provided, and has been from the beginning, that on roads where hauling is done by machinery and on gravity or inclined planes more than one hundred feet in length, a code of signals be established between the hauling engineer and all points on the road. (27).

(27) Section 21 a, 1899; section 8, 1887, 1885, 1877.

Indiana, like Ohio, provides for a metal speaking tube, and, like Illinois, for a code of signals. "The operator of any mine shall provide and maintain a metal tube from the top to the bottom of the mine, suitably adapted to the free passage of sound, through which conversation may be held between persons at each vein and the top of the mine. There shall be a code of signals at all mines with a signal bell at the top and bottom of each mine, one bell shall signify to hoist coal or empty cage and also to stop either when in motion; two bells shall signify that men are coming up; when return signal is received from the engineer men will get on the cage and ring one bell to hoist; four bells shall signify to hoist slowly, implying danger. The engineer's signal for men to get on the cage shall be three bells. A whistle may be

used at the top of a mine instead of a bell. A copy of the above code of signals shall be printed and conspicuously posted at the top and bottom of the shaft and in the engine room." In the acts of 1889 and 1891 from which these provisions were adopted only shaft mines were provided for; there was nothing to indicate that a whistle could be used instead of a bell; and the condition of having one shaft communicate with several veins was not contemplated. As the language indicates the parts based on the Illinois law were taken from the Act of 1887, and added to the original Indiana provisions which had been copied from Ohio. In general the systems of communicating among parts of a mine as well as of moving from place to place--are so highly developed along the lines suggested in the statutes that there is now comparatively little danger of a man being cut off from his fellows under ordinary conditions.

Thus far we have been considering chiefly the duties of the operator towards the miner to make his working place reasonably wholesome, safe and accessible and to provide proper means of escape in case of danger. All that the operator furnishes, however, is the means for safety. The proper use of these means is the corresponding obligation of the mine-worker. Indeed, attempts have frequently been made and are still made to show that in most cases the injured himself is to blame for the accident in which he is involved. No doubt a great many of the accidents reported are due to the carelessness of miners, resulting naturally from their daily contact with the same dangers. A miner in a hurry to get away from his working place, rides on a loaded car once, twice, a dozen times, without being hurt; finally he is killed. Another is eager to get home as early as possible on Saturday, and neglects to timber his working place. On Monday morning when the hurry of the work is suddenly resumed he fails to notice that the roof overhead has been cracked. A few hours later there is a fall of roof. (1) In general, operators say, there is

(1) It appears that more accidents of this sort occur on Monday morning than at any other time of the week. This conclusion was drawn by the late Chief Inspector, R. M. Haseltine of Ohio, (1888-1900) and demonstrated with elaborate statistical tables based on official records in his office.

one part of the mine law that can never be enforced--mine discipline.

(2) Of course there is another side to the story. Our miner, when

(2) This statement was very emphatically made to me by Hon. Richard Newsam of Peoria, Illinois, Chairman of the Illinois State Mining Board in the presence of the operators and miners of that Board and several State Inspectors. One of these, Mr. Walton Rutledge, was about to interpose something about this statement being unfair to the law of Illinois, but he was promptly silenced by Mr. Newsam's question, whether I wanted "facts" or ex-

amples of local patriotism.

asked why the men in his mine jumped on loaded trips on returning from their work, explained that the operator would not run an extra trip for the men and that they preferred running the risk, and incidently violating a dead letter of the law, to wading ankle-deep for three quarters of a mile in mud in their own time to reach the bottom of the shaft. (3) We have already

(3) Testimony gathered at the home of an old unionist, Mr. Thomas Cole of Wellston, Ohio, Aug. 7, 1908, from himself and a number of his friends who have been at work in the mines of Ohio for a long time.

seen how the laws against defiling the air of the mine through bad oil and the convictions of miners that have resulted, show that mining laws can cut both ways. We shall now consider a number of rules scattered in various parts of the law imposing obligations on miners and other mine-workers for the benefit of their fellows. Where duties are imposed on both operators and mine-workers, the intention, at least in Illinois, is not to relieve the operator but to make both the operator and the other person liable for its violation. (4)

(4) *Honrietta Coal Co. v Martin* 221 Ill. 460. Pa. and W. Va. contra. See infra.

The Pennsylvania law which seems to embrace nearly all of the provisions of the other laws as to mine discipline, defines carefully the duties of the mine-foreman, fire-boss, miner, driver, trip-rider or runner, engineer, fireman, fan-engineer, furnace-man, hooker-on, cager, (bottom-man) and top-man. (5)

(5) Other classes of mine workers are: blasters and loaders, carpenters, car-trimmers, company's-men, dumpers, electricians, greasers, laborers, machinists, machine-helpers, machine-runners, motormen, pick-boys, pump-men, roadmen, shot-firers, shovelers, spraggers, switchmen, timbermen, trappers, watchmen and yardmen.

Many of these duties involving inspection and reports are of a kind that we shall treat with administrative provisions. Others pertaining to the property interests of the operator, belong under that heading. Only those of the disciplinary provisions scattered through the laws of the several States that have as their object the safe-guarding of mine-workers need be considered here.

In Ohio the Section on Penalties (6871) disposes of the duties of the mine-workers in a few comprehensive strokes. Whoever does any act whereby the life or health of other persons is endangered; and any miner or other person employed in any mine governed by the statute who intentionally and wilfully neglects or refuses to securely prop the roof of any working place under his control; or knowingly injures any water-gauge, barometer, air-course, or brattice or obstructs or throws open any air-ways, or handles or disturbs any part of the machinery of the hoisting engine or opens a door of the mine and does not have the same closed again, whereby danger is produced to those that work in the mine; or who enters any part of the mine against caution; or who disobeys any order given in pursuance of the act; or who does any act whereby the lives and health of any persons working in the mine are endangered is penalized in the same way as the operator who knowingly violates any of the general sections of the mining laws. Another section (300 R. S.) makes it unlawful for more than ten men to ride on any cage or car at one time or for any person to ride upon a loaded cage or car in any shaft or slope. Special duties are imposed on the hoisting engineer, who is to be an experienced, competent and sober man.

He must not allow any person except such as may be deputed for that purpose, by the owner or agent, to interfere with any part of the machinery, and no person shall interfere with or in any way intimidate the engineer in the discharge of his duties. An attempt to make it unlawful to work as a miner in mines generating fire-damp, gas, or combustible matter, without first having worked at least one year with or as a practical coal miner was made in 1906. A bill (House Bill No. 330) was passed and owing to the indisposition of the Governor was neither signed nor returned to the house wherein it had originated, in the time prescribed by law, and would accordingly have been in force but for the substitution of the word "not" for "only" in the proviso. "In other words.....by error or otherwise the bill which was aimed only at certain mines, was made to read as though it applied to all others than those at which the legislature was aiming." The opinion of the Attorney General given at the request of the Chief Inspector of Mines practically nullifies the Act. (6)

(6) "Whatever the General Assembly may have intended, no measure can be said to be a law until it has been enrolled and signed by the presiding officer of each branch of the General Assembly. If the act under consideration is a law at all it must therefore be with the provision that it shall not apply to mines generating fire-damp, gas or combustible matter; and however well established it may seem to be that the intent of the General Assembly was to legislate against the dangers only in the class of mines mentioned, no such bill has been signed by the presiding officers as required by the Constitution and no such law can now be said to exist. I see no reason to question the power of the legislature to provide reasonable qualifications for the miners in all mines and it probably has the power to determine the qualifications of miners in those mines only in

which appear dangers such as those referred to in this act. I am quite clear, however, that it has no power to provide such regulations in the safer mines and provide no protection at all to those who most need the same, that is, those who work in mines generating fire-damp, gas or combustible matter. Such an exception is, in my judgment enough to invalidate the whole act. Because of the failure of the presiding officers to sign a bill applying only to dangerous mines there is no such law existing and because of a lack of power in the General Assembly to regulate the safer mines to the exclusion of the others, the act as enrolled cannot be sustained."

The whole subject then of mine discipline and the regulation of the actual process of mining coal, including the use of explosives, aside from the very general provisions already cited from the Section on Penalties are left to that single saving clause of the law which gives the inspectors their discretionary power (Section 292). A brief review of the attempts to exercise that power to bridge over the gap in the law will make the chief features of the problems of mine discipline stand out in relief and thus serve as an introduction to the extensive recent legislation of Illinois and Indiana on some of these subjects.

The Ohio Department of Mining has issued from time to time folders and posters containing special rules promulgated by the Chief Inspector in pursuance of his discretionary powers. In 1902 Chief Inspector Biddison issued such a folder containing rules governing the mine-boss, miners, fire-boss, engineers, gatherers and haulers and furnace-men. They may be taken as a summary of all the special rules formulated in various localities for several years by the Inspectors. The degree to which they were intended to be binding is sufficiently indicated by the apologetic tone of the general remarks accompanying the rules: "We feel that we are justified in making the requests

herein set forth." - "We believe that mine-owners, mine-managers and mine-laborers in general are responsible, to a certain degree, for the accidents which occur in and about the mines due to the lack of discipline, and wish to insist upon the enforcement of rules at all mines similar to those herein set forth."

"It would be impracticable to enforce the same rules in all mines but if the rules embodied in this folder are adhered to so far as conditions will permit, we believe that fewer casualties will be recorded in this office." (7) It is easy to

(7) See Report of the Chief Inspector of Mines for the year 1902, p. 72 ff.

see how such rules, no matter how well thought out, would soon degrade into mere unenforceable suggestions. Their contents, which are based on the law of Pennsylvania, have since been repeated somewhat more emphatically: in 1904 in a series of special rules posted in the mines of Belmont, Jefferson and Harrison Counties because of the great number of fatal and serious accidents that had occurred in the mines of those counties; and again in 1907 in notices posted in all the mines of the State. Ever since 1902 the strongest reasons have been given for putting these rules and regulations or their equivalents on a firmer basis than that afforded by the discretionary power of the Inspectors. (8) The present Chief Inspector

(8) Letter of transmittal of Report of Chief Inspector of Mines, 1902. -
Letter to Governor Herrick, Dec. 15, 1905,
Report, 1905 p. 28 - Report, 1906, p. 8, p. 35.
For use of powder see Reports of 1893 and 1895
where mere suggestions are given.

points out the same conditions as those enumerated by his predecessors - the displacement of "the Welsh, Scotch and English

miners who by nature, instinct, and training from childhood, were well skilled in all the arts and methods of mining as practiced at that time," by unskilled, non-English speaking laborers; the introduction of a vast amount of machinery and the application of electricity; the indiscriminate use of powder, and the great increase in the number of deep-shaft, gaseous mines. "Such discipline as exists," is his conclusion, "might have been ordinarily safe under the conditions that prevailed in mines thirty or forty years ago (when the mining laws were written), but if there is not a more rigid observance of necessary laws and orders it is no idle prediction to say that at no very distant date human life will pay dearly for the looseness which prevails." The most important recommendations for legislation on mine discipline contained in these rules and elsewhere in the mining reports of Ohio are the employment of a fire boss, and the prohibition of "brushing out" gas (9) in

(9) I. e. the dangerous practice of beating buffeting, "dadding" or "waffing" out accumulations of gas as with jackets etc., and also the explosion of small portions with a light.

mines generating fire-damp, the requirement of greater care in the transportation of powder, explosives and working tools into the mine; the prohibition of riding on loaded cars or motor or high speed haulage trips, or on cages not fitted with safety-catches; the prohibition of loitering in the mines, leaving places during working hours, committing nuisances and propping open automatic doors; the requirement of proper warning before firing shots, and prompt reporting of dangers. The discipline in force in the mines of the British Isles is alluded to with approval especially in connection with the prohibition of

miners "having matches, pipes or liquor in their possession, smoking, drinking or sleeping in the mines, carrying powder or cartridges in pockets or open hands" and practicing other kinds of carelessness already alluded to. One subject, however, which has for some time been given considerable attention in the other States by legislatures, and in Ohio, at least by union leaders, is purposely excluded from the rules and recommendations of the Mining Department -- the employment of special-shot-firers. The reasons for this omission given by the Chief Inspector are the disadvantages of shot-firing at night and the injustice of transferring the danger from the men who are responsible for it, "the unskilled driller of holes, and worse, still, the unscrupulous powder fiend, who is afraid to fire his own shots," to the innocent shot-firer, who is induced to accept that position because of a few extra cents a day in wages. The remedy that he would suggest for the evils connected with firing shots is to require the undercutting of all coal that can be profitably cut by hand or machinery. "If there is any that cannot be successfully mined in that way, it may then be necessary to consider the wisdom of shot-firers. In any mine where from the presence of fire-damp, or any other cause, shot-firers would be necessary, we believe the mine should be provided with a sufficient volume of air - as all mines ought to be - to allow shots being fired any time during the day, so as to promptly dilute and carry away the powder smoke. Shot-firers should be men of wide practical experience, good judgment, and clothed with a great deal of discretionary power in the firing of shots. They should examine the manner in which the hole is drilled, the amount of

powder used in it, see that the place is properly posted, and that no danger from falling roof or standing gas exists. If not satisfied on all these points, {they} should have the power to refuse to fire any shot, and prohibit its being fired." (p. 38.)

In Illinois many provisions similar to the special rules issued by the Inspectors of Ohio, have been embodied in the general mining act. In particular extensive provisions relating to shot-firing and the handling of powder have been added to the law in several supplementary acts. (10) Several of the duties

(10) May 14, 1903, amended May 24, 1907;
May 18, 1905, amended May 20, 1907.

of miners and mine officials enumerated in Sections 16, 17, and 18 have already been mentioned in connection with timbering, ventilation and hoisting machinery. Others again will be treated among administrative provisions. The rest are the regular duties of the mine manager, hoisting engineer, mine examiner, miners and other mine workers.

"The mine manager shall instruct employes as to their respective duties..... In case of accident to fan or machinery by which the currents are obstructed or stopped he shall at once order the withdrawal of the men, and prohibit their return until thorough ventilation has been reestablished..... He must also see that all dangerous places, above and below, are properly marked and that danger signals are displayed wherever they are required." He must "be at his post when the men are being lowered into the mine in the morning for work.....keep a record of the number of men lowered either for day or night shift" and "remain at night until all the men employed during the day shall have been hoisted out." He may appoint assistants to perform these

duties. (11)

(11) Sec. 16 Act of 1899. In the earlier acts some of those duties were vaguely imposed on "the owner or agent" instead of the "mine manager." The same is true of the following paragraphs enumerating the duties of other mine officials taken from Sections 17 and 18 of the same act.

The hoisting engineer must be "in constant attendance at his engine or boilers at all times when the men are working underground;" he "shall not permit anyone to enter or loiter in the engine-room except those authorized by their position or duties to do so," and he must "hold no conversation with anyone while the engine is in motion or while his attention is occupied with the signals." These he must thoroughly understand; they must be delivered in the engine room in a clear and unmistakable manner. When he has the signal that men are on the cage he may not lift or lower them at a rate of speed greater than six hundred feet a minute except with the written consent of the Inspector. He "shall permit no one to handle or meddle with any machinery under his charge nor suffer anyone who is not a certificated engineer to operate his engine except for the purpose of learning to operate it and then only in the presence of the engineer in charge and when men are not on the cage." He or some other properly authorized employee "must keep a careful watch over the engine, boilers, pumps, ropes and winding apparatus." He must see that his boilers are properly supplied with water and cleaned at frequent intervals and that the steam pressure does not exceed the limit established by the boiler inspector. "If any of the pumps, valves or gauges become deranged or fail to act he must report the fact to the proper authority."

A "mine examiner" is required at all mines. His duties, as the words suggest, are chiefly to make examinations and reports. He must also post danger notices when working places are discovered in which accumulations of gas, or recent falls or any other dangerous conditions exist. (12)

(12) The mine examiner corresponds to the fireboss of other States and of the earlier Illinois law.

"No mine worker shall be allowed to enter the mine before the mine examiner's daily record is made or to remain in any part of the mine through which gas is being carried into the ventilating current, nor to enter the mine to work therein except under the direction of the mine manager until all conditions shall have been made safe." (Sec. 18 b. from Sec. 6 C. 1887) In general miners are cautioned against doing any wilful act whereby the life or health of persons working in mines is endangered. (31, 1899 cf. p. 201 below)

"At every shaft operated by steam power, the operator must station at the top and at the bottom of such shaft a competent man, charged with the duty of attending to signals, preserving order and enforcing the rules governing the carriage of men on cages. Said top and bottom-man shall be at their respective posts of duty at least a half hour before the hoisting of coal begins in the morning, and remain for half an hour after hoisting ceases for the day." (Sec. 28 a) No person may carry any tools, timber or other materials with him on a cage in motion, except for use in repairing the shaft, and no one may ride on a cage containing either a loaded or empty car. No coal may be hoisted in any shaft while men are being lowered therein (Sec. 28 c. from

Sec. 6 c. of 1887). Whenever men who have finished their day's work, or have been prevented from further work, come to the bottom to be hoisted out, an empty cage must be given them for that purpose, unless there is an available exit by slope or by stairway in an escapement shaft, and providing there is no coal at the bottom ready to be hoisted. (13)

(13) Sec. 28 d from Sec. 6 b 1887. The Illinois wage scale limits this duty. See Sec. 22 of the 1908 agreement.

The laws regarding the use of powder in Illinois deal with its storage and care, the manner of handling it, the kind of tools to be used in charging, the use of squibs, exploding blasts, missed shots and the employment of special firers in certain cases. They summarize the practices of the best coal mines in a clear and concise manner. "All blasting powder and explosive material must be stored in a fireproof building on the surface, located at a safe distance from all other buildings." (Section 5) "No blasting powder, or other explosives shall be stored in any coal mine and no workman shall have at any time more than one twenty-five pound keg of black powder in the mine nor more than three pounds of high explosives, and in no case shall more than one kind of explosive be used in any one drill hole: Provided, that nothing in this section shall be construed to prevent the operator of any mine from taking into the mine, when miners are not therein, and in electrically equipped mines, while the current is turned off on roadways through which it is transported, a sufficient quantity of powder for the reasonable requirements of such mine for the next succeeding working day. Every person who has powder or other explosives in a mine shall keep the same in a wooden box securely locked, with hinged lid, and said box shall be kept as far as

Practicable from the track; and all powder boxes shall be kept as far as practicable from each other and each in a secluded place; nor shall black powder and high explosives be kept in the same box. Whenever a workman is about to open a box or keg containing powder or other explosive, and while handling the same, he shall place and keep his lamp at least five feet distant from said explosive and in such position that the air current cannot convey sparks to it, and no person shall approach nearer than five feet to any open box containing ~~an~~ open keg of powder or other explosive with a lighted lamp, lighted pipe or other thing containing fire. No miner, workman or other person shall open any keg, can or other container of blasting powder or other explosive with any pick, wedge, tool, or in any manner except by the means of opening the same provided by the manufacturer thereof; and it shall be unlawful, and a violation of this Act, for any person to have in his possession in any mine any keg, can or other container of blasting or other explosive, containing blasting powder or other explosive which has been opened in violation of this Act. In the process of charging and tamping a hole, no person shall use any iron or steel pointed needle. The needle used in preparing a blast shall be made of copper and the tamping bar shall be tipped with at least five inches of copper. (14) No coal dust nor

(14) Copper tipping was required on tamping bars as early as 1885, by an act approved June 21 of that year. See Report of that year for account of dangers of iron and steel tamping bars.

any material that is inflammable," whether the same be wet or dry, or that can create a spark in tamping, shall be used for tamping " and some soft material must always be placed next to the

cartridge or explosive. A miner, workman or shot-firer who is about to explode a shot with a manufactured squib shall not shorten the match thereof, nor saturate it with mineral oil nor ignite it except at the end; and he shall see that all persons are out of danger from the probable effects of such shots, and whether using squibs or fuse shall take measures to prevent any one approaching by shouting 'fire' immediately before lighting the same. Not more than one shot shall be ignited at the same time in any one working place unless the firing is done by electricity or by fuses of such length that the interval between the explosions of any two shots, shall not be less than one minute, and in no case shall any shot or shots be fired or lighted which are termed depending or dependent shots, until after the expiration of ten minutes from the successful firing of such other shot or blast. When successive shots are to be fired in any working place in which the roof is broken or faulty, the smoke must be allowed to clear away and the roof must be examined and made secure between shots. No person shall return to a missed shot if lighted with a squib until five minutes have elapsed from the time of lighting the same, or if lighted with fuse, until the following day; and no person shall return to a missed shot when the firing is done by electricity unless the wires are disconnected from the battery."(15)

(15) Section 20 of the Act of 1899 as amended May 18, 1907.

A standard charger according to the law is a cylindrical metallic charger not to exceed twelve inches in length and not to exceed one and one half in diameter. The amendment of 1907 simply substituted the numbers of "chargers" for the corresponding number of inches.

By supplementary legislation (Act of 1903 amended 1907), it is re-

quired that where the coal is blasted the quantity of powder to be used in the preparation of shots shall not in any case exceed five standard chargers full of powder in coal seams five and one half feet or over in thickness; and shall not, in any case, exceed four standard chargers full of powder in coal seams under four and one-half feet in thickness. The same act forbade the drilling of "dead holes". (16)

(16) "It is found," says one of the Illinois State Inspectors, "that quite a difference of opinion prevails among mining men as to what is known as a 'dead hole'. Some contend that a 'dead hole' is one that is drilled beyond the line of least resistance, while many others maintain that a 'dead hole' is any hole drilled beyond the free face of the coal". He accepts the latter view. (Inspector Taylor, Report 1906)

Still more recently (1905) what is known as the "Shot-firers' bill," was enacted. In its present amended form (that of 1907) it provides that wherever coal is blasted, and more than two pounds of powder used for any one blast, and also in all mines where gas is generated in dangerous quantities, a sufficient number of practical experienced men to be designated as shot-firers, be employed by the company and at its expense, and it shall be their duty to inspect and do all the firing of all blasts prepared in a practical, workmanlike manner in said mine or mines. The shot-firers immediately after the completion of their work must post a notice in a conspicuous place at the mine, indicating the number of shots fired; also the number of shots they did not fire, if any, specifying the number of the room and designation of the entry, and giving reasons for not firing the same. In addition they must also keep a daily permanent record, of the number of shots or blasts fired, the number of shots or blasts

failing to explode, and the number of shots or blasts that in their judgment were not properly prepared and which they refuse to fire, giving reasons. This record must be kept by the mine manager and be available for inspection at all times by parties interested. The superintendent or mine manager shall not permit the shot-firers to do any blasting, exploding of shots, or any firing whatever until each and every miner and employe except the shot-firer is out of the mine. The rest of the act was added in 1907. It permits the mine manager and any man or men necessarily engaged in charge of the pumps and stables, and a reasonably necessary number of men employed for the purpose of securing the workings in case of fire, to remain in the mine after shot-firing has been begun. It provides also that no miner nor other person shall alter or change any drill hole by increasing its depth, diameter or otherwise, after the same shall have been approved by the shot-firer; that no shot-firer whether voluntarily, or by command or request of any person, shall fire any unlawful shot, or any shot which in his judgment is not a workmanlike, proper and practical shot; and that no person or persons shall order, command, or induce by threats or otherwise, any shot-firer to fire any unlawful shot, or any shot which in his judgment is not a workmanlike, proper and practical shot. Most of these provisions are of too recent date to permit the writing of their history. The shot-firers' bill was enacted as one of the results of the efforts of what was probably the strongest labor lobbying committee ever sent to a State capital. A number of leading operators acknowledged themselves "beaten at their own game" but insisted that the spirit of the State agreement between miners and operators had been violated, in that the miners had done something to increase the price

of coal at a time when the wage scale had still eight months to run. Although the provision that "neither party to the contract shall initiate or encourage the passage of laws that would in any manner affect the obligations of this contract or abrogate its provisions" that now concludes the Illinois wage-scale was not then in existence, and although the law specified that shot-firers be employed by the company and at its expense (17) the miners were

(17) (Sec. 1 of the act of 1905 corresponding to Section 2 of the act of 1907)

willing to do what they thought right and accordingly left the matter to arbitration. Judge George Gray of Delaware, whose name was one of several submitted independently by both sides, was chosen to decide the matter. He found that the advantages of having shot-firers were shared by both operators and miners, and declared that therefore each side should pay half. They accordingly shared the extra expense until the next wage-scale was entered into. The present agreement reads: "Wherever it is practicable the miners will shoot the coal with two pounds of powder or less (to exempt the mine from the provision of the act altogether). Where that is impracticable, the miners working in the mine where shot-firers are required under the State Mining Law, shall reimburse the operator for the wages paid such firers (Sec. 5C)." The Illinois Coal Operators' Association agrees on the other hand to do all in its power to limit the cost of shot firing to the minimum. (Sec. 5G) Thus while the general object of the law is strengthened by the collective agreement an unjust clause in this act is practically made as inoperative as if removed by an act of the General Assembly. (18)

(18) The increase in the cost of producing coal resulting from hiring shot-firers is approximately three cents a ton. For accounts of the dispute preceding the present agreement, during which the mineworkers had to choose between striking and paying the shot-firers, by a referendum vote, see United Mine-Workers Journal, Vol. XVIII No. 50, p. 1, (Apr. 25, 1908) and Vol. XVIII No. 52, p. 7 (May 7, 1908).

As to the workings of the act an unfavorable impression reflected in the comments of the Inspector of another State already quoted gained ground as the result of accidents killing several shot-firers soon after the act. Still that impression is one-sided "while the experience of this, the first year under the shot-firers' law" says the Illinois Report of 1906, "sustains the contention that its adoption would diminish the number of fatalities due to such causes, it would be unfair to confine our judgment of the ultimate effects of the law's operation to the results shown by the present year for the reason that many of those accepting the position of shot firer had no previous experience in such work. There is every reason to expect, partly from a better knowledge of the work and the exercise of greater care, that the number of accidents from these causes in the future, will be reduced to a minimum. Compared with the record of the last few years, there has been a substantial reduction in the number of fatalities resulting from the use of powder." (19).

(19) The average number of fatal accidents due to powder and blasting from 1888 to 1900 was 7.66. The number since then have been for the respective years: 17 - 3 - 13 - 47 - 82 and 24. Omitting the 47 killed in 1905 at the Zeigler mines the percentages of fatal accidents due to powder from 1901-6 have been 27.8 - 32.9 - 29.5 - 42.5 - 31.6 - 35.9. The non-fatal accidents for the same year due to the causes show remarkably parallel fluctuations: 8.33 - 9.90 - 11.83 - 12.68 - 7.39 - 7.11.

Indiana, too, provides for the duties of mine officials and to a limited extent of miners especially in connection with the use of explosives.

The operator is expected to place in charge of his engine used for conveying into and hoisting out of the mine an experienced competent and sober engineer. His duties are copied partly from the Ohio law and partly from the Illinois law. "The engineer in charge of such engine shall allow no person except such as may be deputed for that purpose by the owner or agent to interfere with it or any part of the machinery, and no person shall interfere {with} or in any way intimidate the engineer in the discharge of his duties." This much was copied into the original law from the Ohio law in 1879. The rest was taken from Illinois in 1905. "He shall not permit any one to loiter in the engine room and he shall hold no conversation with any officer of the company or other person while the engine is in motion, or while his attention should be occupied with the business of hoisting. A notice to this effect shall be posted on the doors of the engine house. He shall thoroughly inform himself of the established code of signals. Signals must be delivered in the engine room in a clear and unmistakable manner, and when the signal is received that men are on the cage he shall speed his engine not to exceed six hundred feet per minute." (Sec. 10)

A competent mine boss, who must be an experienced coal miner, is also to be appointed by the operator. Besides his work of inspection he must oversee the securing of the roof especially in traveling ways and air courses. But most of his duties are purely administrative. (20)

(20) Sections 11 and 12 based on acts of 1891 and 1897 and going back for nucleus to original law, Sec. 16 amended 1883 and 1885. See under administration for details.

Mine workers in general are subject to the following regulations: they are prohibited from riding on cages when coal or dirt is being hoisted, and in no case must more than six men ride on any cage or car at one time. (21) They are also pro-

(21) (Sec. 4 based on Sec. 5466 of the Revised Statutes of 1881, Sec. 10 of 1879)

hibited from injuring or interfering with any safety-lamp, air-course, or brattice, or obstructing or throwing open doors, or disturbing any part of the machinery, or riding upon a loaded car or wagon in any mine or doing any act whereby the lives or health of the persons are endangered. In the supplementary act of 1907 a special section is devoted the conduct of men using cages. "It shall be unlawful for any person desiring carriage upon any cage to approach nearer than six feet to any 'cage landing' when such cage is not at rest at such landing; or to crowd on to said cage in a rude or boisterous manner; or to enter upon any such cage when there are already upon the same one person for each three square feet of the floor space of such cage; Provided, that nothing herein contained shall affect any person in charge of the operation of such cage or the machinery moving or affecting the same: And, provided further, that as many persons may after the passage of this act enter a cage for carriage as the same will accommodate, giving each person three square feet of floor space."

The process of preparing coal for shooting, drilling charging, tamping and firing is minutely described, in Sections 3 and

17 of the main law and in a series of Sections in a supplementary act approved March 1907. In those Sections the law orders that no person drill past the end of his cutting, "loose end," or "chance," for the purpose of blasting coal in any mine, except in mines producing block coal. (22) Unless he first ob-

(22) Sec. 3, 1907 taking the place of part of Sec. 17, 1905.

tains the consent in writing, of the mine foreman or other person in charge of the operation of the mine, setting forth the use for which any required cap or explosive may be particularly intended, it shall be considered unlawful for any person to take or have in his possession, or under his control within any coal mine, any such dynamite cap, dynamite or other high explosive (Sec. 1, 1907). All explosive materials must be stored in a fire proof building on the surface, located at a safe distance from all other buildings (Sec. 3, 1905). "Whenever any person is about to open a keg or box containing powder, or other explosives, he shall place and keep his light at least five feet distant from said explosive, and in such a position that the air current cannot carry sparks to it; and no person shall approach nearer than five feet to any open box or keg containing powder or other explosives with a light or pipe or any other thing containing fire" (sec. 17, 1905). It shall not be lawful for any person, for the purpose of blasting coal in any mine, to prepare any "shot" in such a way that the distance from the drillhole to the "loose end", "chance" or end of cutting shall be more than 5 feet, measured at right angles to the direction of the hole; or to place any charge of powder or other explosive in any drill hole prepared for any "shot" in which the breast of coal to be dis-

lodged is of greater width than the depth of the drill-hole; or to use in preparing any "shot" more than six pounds of powder; or to place any powder in any drill hole for the purpose of preparing any shot without measuring the amount so placed therein with a substantial measure so made as to indicate the weight of blasting powder measured therein; or to open a keg, can, or other package containing powder, by means of a pick or in any other manner except in pursuance of the manner provided in the manufacture of such keg, can or package; or to sell or offer for sale any keg, can or package containing powder unless such can, keg, or package, be provided with a sufficient device for opening the same and permitting the discharge therefrom of all the powder therein contained; or to store any blasting powder, dynamite, or other high explosive in any coal mine; or to prepare any drill bit more than two and one-half inches in diameter to be used in boring holes for the purpose of preparing any shot; or to use any dynamite or other high explosive in conjunction with black powder." (Section 2, 1907) In any mine wherein fire-clay or other non-inflammable material suitable for use in tamping in preparing shots can not be readily obtained, it is made the duty of the operator or owner, to provide and deposit such material at points within five hundred feet from the face of each entry in such mine (Section 8, 1907). In the process of charging or tamping a hole, the needle used for preparing the blast must be made of copper, and the tamping bar must be tipped with at least five inches of copper. No coal dust or any material that is inflammable, or that may create a spark may be used for tamping and some soft material must be placed

next to the cartridge or explosive (Sec. 17, 1905). (23) At

(25) This provision had been recommended by the Inspector in 1884 with the remark that the effect of a similar section in Illinois and some of the other States had been carefully watched and found beneficial.

any coal mine where the miners working therein so elect, persons may be employed to act as shot-firers, and their wages shall be paid by the miners working therein. A proviso based on the unpleasantness created in Illinois in 1905 was inserted in the Indiana shot-firers' law that nothing contained in the section affect any existing contract as to shot-firers (Sec. 9, 1907). No person in any coal mine may explode or light any shot in any working place simultaneously with the explosion or lighting of any shot by the same or any other person in any other working place on the same entry, except in working places where coal is undercut by machinery (Sec. 5, 1907). The general history of the above laws regarding powder and blasting dates back to the agitation started in 1898 as a result of the death of three men caused by shot-firing. "The increase of machine mining," says the Inspector in his report of that year," and the fact that all coal mined in this way is blasted as soon as cut, or at least during working hours, filling the working places with powder-smoke, call for some regulation as to the use of blasting powder in mines." In 1899 two such laws were passed. Among other things these made blasting by day except in new mines unlawful, required firing in such rotation as would permit the safe exit of all miners, prohibited drilling more than one foot past the end of the cutting or "loose end" or preparing a shot in such a way that the distance from the hole to the loose end be more

than five feet in mines where blasting off the solid is practiced, and made it unlawful to use more than eight pounds of powder in one shot, and to fire shots during working hours. The interpretation placed upon the last of these provisions, that it applied only to "hours established by rules of work in the mines," permitted "shooting" during the noon hour. The inspector wanted the act amended "so as to prohibit shot-firing from starting time in the morning until quitting time in the evening." Nevertheless as no deaths resulted directly from shotfiring in Indiana in 1899 he thought the new legislation, which it is said was generally complied with, eminently successful. (See Report of 1899). Still the direction in which this development had been begun was abandoned in the codification of 1905 and the example of the Illinois laws of 1899 was as we have seen closely followed. The whole subject of powder and blasting was in such an uncertain state, however, in Indiana just at this time that all parties interested were clamoring for new laws. The number of fatal and serious accidents due to the use of powder had been increasing ever since the use of the fuse in shot-firing had become general in the State, that is, during 1902 and 1903. Within a few years at least 98 percent of the shots were being fired by this method. Between 1900 and 1905 the numbers of fatal accidents traceable to the use of explosives were for the respective years three, four, seven, nineteen, nine and eighteen; the numbers of serious accidents, six, twenty-one, twenty-six, twenty, seventeen. But this was not the worst phase of the matter. From the records in the office of the State Inspector, it appeared that during the same period accidents from falling slate had also nearly doubled.

According to the Inspector this increase was largely a result of props and other timbers having been knocked down by flying coal, a natural outcome of the miners' universal practice of firing their shots in the evening and beginning to load early in the morning without resetting the timbers. (24)

(24) Report of the State Inspector of Mines for 1906, p. 702.

Closer examination of some of the accidents began to reveal some very dangerous practices that called for immediate attention from the legislature. Thus in commenting on one particularly unfortunate case, where the victim was innocent, the Inspector remarked: "A very dangerous practice, one for that matter which a majority of shot-firers are guilty of, is exhibited in this instance, viz., that of lighting a number of shots in succession, frequently causing a dozen or more to explode at the same moment, thus creating a dense body of powder smoke, sometimes at almost white heat. Also the extra heavy concussion of so many shots raising the coal-dust in suspension, and should the flame of a blown out shot enter the atmosphere in this condition an explosion of greater or less violence is sure to follow." (Report, 1905 p. 1113). In other words, the need of the law preventing simultaneous explosions (cf. Sec. 5 Act of Mar. 9, 1907) was keenly felt.

Although the condition improved slightly during the year following the enactment of the mining code, the air was filled with agitation which resulted in the extensive amendments of 1907, the contents of which we have already considered. Some of the hopes of labor it is true have not been realized in these laws; yet the agitation for the better regulation of shot-firing

has abated and the center of interest in mining laws has been shifted temporarily at least to other parts of the law.

CHAPTER VIII

The Interests of Property-owners and of Operators.

A second series of common-law rights protected and now rights defined by the mining laws pertains to the interests of property holders. The amount of attention given to this important subject in our statutes is surprisingly small until we consider that neither questions as to claims, which make up the bulk of the mining laws and voluntary mining codes in new countries, nor questions of the rights of the Crown, involved in the laws of old countries, have much bearing on the conditions in Ohio, Indiana and Illinois. Furthermore, so much of the law of mines and mining as pertains to property rights in a strict sense (1)

(1) e.g. the comparative rights of owners and lessors of the surface and of mining rights, the special and implied covenants of mining leases to work the mine diligently and in a safe and proper manner, to pay royalty and to deliver it up at the end of the term in good order, the right of neighboring landowners to subjacent and lateral support and to flowing water.

is left in these States to the common law as interpreted in their courts. The few sections of those statutes then, that bear upon property rights come in rather because of a relationship in subject matter with the clauses protective of the interests of miners than for their own sake or because of community of purpose with the "mining laws" proper. Thus, the rights of the landlord are protected through mine maps, checkweighing and even special liens -- three methods that were introduced originally for the protection of the miners, and only incidentally, and perhaps for compromise, for the benefit of landlords. (2)

(2) For histories of the Sections mentioned in the following paragraphs, see discussions of maps, weighing and liens in other parts of the paper.

In Ohio, Section 305 grants the right of access to mines for the purpose of examining scales, machinery or apparatus used in or about such mines to determine the quantity of coal mined for the purpose of determining the accuracy and correctness of all such scales, machinery and apparatus, and of appointing one checkweighman or checkmeasurer, not only to the minors employed but also to the owners of land or other persons interested in the rental or royalty of such mines. The right of such landowner to examine the map of the mine is not specifically given in the Ohio Statute. In fact, the only persons to whose inspection mine maps must be open are the Mine Inspector and his assistants. Nevertheless places for filing maps are provided where they shall be of easy access and convenient reference to persons entitled to examine them. And the maps of oil lands for which provisions are made, similar in many respects to those made for mine-maps, must be filed in the office of Chief Inspector of Mines and "must be open for inspection at all reasonable times." Long before the main body of the present mining laws was passed in Ohio there was a statute on the books (May 7, 1861) giving any person having an interest in any mine and having reason to believe that the protection of his interest in the mine requires it, the right upon making affidavit to that effect before a justice of the peace, to enter and make an examination or survey of the mine. (3) This provision is still in force (4374 R. S.)

(3) The details of the act regarding facilities for such examination, etc. will be considered under the rights of adjoining landowners to whom the act applies more directly.

along with any others that the mining laws have added. Before a mine is abandoned a corrected map must be made and filed with the County Recorder to become a part of the County record of the land on which the mine is located.

The Illinois statutes on weighing, like those of Ohio, extend the right to examine the record of all coal weighed not only to miners but to others interested in the product of the mine. Landlords, however, have no right to a checkweighman. They have the right of examining maps at the offices of the Inspectors, as have all persons interested in them, in the presence of the Inspector. They have the power, however, to grant written permission to have copies made, a power which they share only with the operators. Whenever "the conservation of the property" requires it, the State Inspector of Mines may order a special survey to be made of any mine, and the results to be extended on the maps of the same and the copies thereof.

The record of coal weighed, in Indiana, must be kept open for the inspection of all persons pecuniarily interested in the product of the mine, including of course the owner of the land. He and others personally interested in the product of the mine are given at all proper times full right of access to, and examination of, scales or apparatus used for weighing coal in or about the mine, including the bank book in which the weights of coal are kept to

determine the amount of coal mined, for the purpose of attesting the accuracy thereof (Section 9, taken from Section 14 of the original law). The law gives no right to the landowner to place a checkweighman on the tippie. The maps required to be made are open for inspection, at the office of the mine, to all interested persons at all reasonable times, including the owner of the land. At his request the Inspector of Mines must make or cause to be made a special, accurate map of the workings of the mine, on a scale of not less than one inch to the one hundred feet, showing the area mined or excavated and the location and connections of the lines of all adjoining lands therewith, and the names of the owners of such lands so far as known. Such map must be sworn to by the surveyor to be a correct map of the workings of such mine, and must be kept on file in the office of the Inspector of Mines for examination at all times. All expenses must be paid by the party causing such survey and map to be made. The historical reason why the Indiana law seems to repeat itself or at least to furnish two concurrent provisions for the same end, that parties interested may have access to maps of the mine, will appear more clearly in our discussion of mine maps among "reports." Briefly, it is as follows: The law of 1879 required maps; the revision of 1881 abolished them except at the option and expense of parties interested; the law of 1897 made map-making compulsory again and the codification of 1905 throw everything that had been said about maps into one section. As in Ohio, provision is made for filing

a map of abandoned mines as a part of the records of the land on which the mine is located in the office of the County Recorder. This provision was taken in 1885 almost word by word from the Ohio law.

In one particular in connection with the rights of land-owners the Indiana law has been quite original from the beginning. In granting the miners and other persons employed and working in and about the mines a special lien, it has extended the right to "the owners of the land or other persons interested in the rental or royalty on the coal mined therein," (1879) or more briefly in the words of the present law, "others interested in the rental or royalty." (3)

(3) This section is constitutional and the liens given hereby have preference to prior mortgages. Warren V. Sohn, 112 Indiana 113.

The property interests of the operator are, of course, provided for by implication in many of the sections that look primarily to the protection of the miner; for example, those looking to the prevention of explosions, to the prevention of falls of roof, and in general to the safety of machinery and safety appliances. They are, however, specifically provided for in imposing special duties as to the care of property or mineworkers, and in those permitting operators to cross roads and enter adjoining lands for various purposes.

In Ohio, penalties are imposed on any miner or other person employed in any mine governed by the statute, who neglects or refuses to obey any order given by the superintendent of a mine in relation to the security of the mine or any part thereof where he

is at work, or for fifteen feet back from the face of his working place; or who knowingly injures any water-gauge, barometer, air-course or brattice, or obstructs, or throws open any air-ways, or handles or disturbs any part of the machinery of the hoisting engine, or opens a door of the mine and does not have the same closed again, whereby danger is produced, or who disobeys any order given in pursuance of the act; or who does any willful act, whereby the security of the mine, or the machinery thereof is endangered. (4) Further clauses protecting the

(4) Sec. 6871; see under Penalties.

property rights of the operator in Ohio pertain to crossing roads and entering adjoining lands for certain purposes. In 1893 an act was passed to permit mine and quarry operators to undermine or cross public roads with the consent of the board of county commissioners in case of state or county roads, or township trustees in case of township roads; provided, however, they first executed and delivered to the board of county commissioners a bond with good and sufficient surety in such amount as might by said board be considered sufficient to cover all damages that might accrue by reason of excavating, mining, or quarrying through or under any such road, the same to be approved by said board; conditioned that while crossing over or mining or quarrying under any such road a safe and unobstructed passage-way or road be kept open by such individual, partnership or corporation for public use, and as soon as practicable the said road be fully restored to its original safe and passable condition. In connection with making a second outlet when

the owner does not own suitable ground, the right to enter adjoining land is given as follows: "In case a coal mine has but one shaft, slope, or drift, for the ingress or egress of the men working therein, and the owner thereof does not own suitable surface ground for another opening, he may select and appropriate any adjoining land for that purpose and may make an additional shaft or outlet under, through, or upon any intervening land, or land adjoining, and shall be governed in his proceeding in appropriating such land by the provisions of law in force providing for the appropriations of private property by corporations, and such appropriation may be made, whether he is a corporator or not; but no land shall be appropriated under the provisions of this chapter until the court is satisfied that suitable premises cannot be obtained upon reasonable terms. (Sec. 297 O. R. S., clauses added in 1886)

An attempt was made at one time to interpret this section as granting the right to invade a neighbor's mine, because the expense of making a new shaft would be very great. The Attorney-General, who was consulted in the matter ruled that the expression, "suitable surface ground," meant ground so situated that a shaft sunk upon it would successfully accomplish the purpose for which it was intended. Where such ground is available, the question of expense cannot be taken into consideration. (5)

(5) Report of the Chief Inspector
of Mines, 1896.

In Illinois the property rights of the operator are protected by duties imposed on the mine-workers by laws regarding the opening and keeping open of communications with adjacent mines to satisfy the requirement of a second outlet and by the right of eminent domain under certain conditions. Thus it is unlawful for any miner, workman or other person, either knowingly or carelessly (contrast the rule in Ohio and Indiana where knowledge must be alleged) to injure any shaft, safety-lamp, instrument, air-course or brattice, or to obstruct or throw open any air-way or carry any open lamp or lighted pipe, or fire in any form into any place worked by the light of safety lamps, or within five feet of machinery, or open any door regulating an air-current and not close the same, or to enter any part of the mine against caution, or to use other than copper needles and copper-tipped tamping bars, or to disobey any order given in pursuance of this act, or to do any wilful act whereby the security of the mine or the machinery thereof is endangered. (Sec.31) The fact that this section also applies to safeguarding the health of persons working in the mines suggests at once that many other clauses of the mining laws intended primarily for the safety of the men redound incidentally to the safety of the mine; for example, timbering, care in the handling and the use of explosives and ventilation. In the early days this fact received less attention than in the later forms of the law; but even in the very latest acts it has effected the form of the law so little that we may pass over this phase

of the subject as a mere coincidence, a series of cases where the best interests of one party happen to be served by the same means as those that serve the interests of another party. Even in the case of the peculiar easement granted the operator in adjoining lands for the purpose of maintaining a second opening contemplates as its ultimate object, the safe-guarding of the men. When the act requiring two distinct means of ingress and egress for all persons employed in the mine was passed a communication with a contiguous mine was mentioned as satisfying the conditions of the law. In 1885 the law went further in its approval of such joining of properties by providing "that when two or more coal mines are so located as to allow the said mines to be connected by permanent entries between them, and the land or mining rights lying between such mines is owned by any person or persons with whom the owner or owners of said mine or mines are unable to agree, for the purchase of the right of way for the connecting entry or entries between such mines and the right to maintain and use such entry as a connecting entry, such owner or owners of any such coal mine or mines or either of them may acquire such right or title in the manner that may be now or hereafter provided for by any law of eminent domain." In 1887 it was stipulated that when the shaft of one mine had been used or might thereafter be used as an air or escapement shaft for another mine neither owner nor operator should close or obstruct his shaft or workings so as to prevent the use of the same as an escapement or air shaft without first giving one year's not-

ice in writing to the other operator or owner, of his intention to abandon his mine. Since that time the law of keeping such communication open has been slightly modified. Its present provisions are that when operators of adjacent mines have by agreement established such underground communication between their mines as an escapement outlet for the men employed in both, each owes it to the other, as well as to his employees, regularly to patrol his portion and to keep it clear of every obstruction to travel. Each is furthermore prohibited by law from closing his mine without the consent, both of the contiguous operator and of the State Inspector for the District; "Provided that when either operator desires to abandon mining operations, the expense and duty of maintaining such communication shall devolve upon the party continuing operations and using the same." (Sec. 3, 1.)

Another law giving the right of eminent domain to operators provides that when any mine shall be so situated that it cannot be conveniently worked without a road or railroad thereto, or ditch to drain the same or to convey water thereto, and such road, railroad or ditch shall necessarily pass over, through or under other land owned or occupied by others, the owner or operator of any such mine may enter upon such lands, and construct such road, railroad or ditch, upon complying with the law in relation to the exercise of the right of eminent domain; and that the commissioners of highways of any county under township organization, and the county board in counties not under township organization, may, when the public good requires, cause to be laid out and opened, public

highways, or private roads or cartways, as the public good may require, in the same way as now is or may hereafter be provided by the law for the laying out and opening of public highways or cartways, and may permit the owner, lessee or operator of any coal mine to lay down and operate a horse or dummy railway thereon, or upon any highway or private road or cartway now or hereafter laid out and opened for public or public and private use, but always in such manner and way, and upon such place thereon, as not unnecessarily to interfere with ordinary public travel. (6)

(6) An act to revise the law in relation to mines, 1874.

The general principles illustrated in the Ohio and Illinois law regarding the protection of the operator, are illustrated in the laws of Indiana. There, too, any person who "knowingly" (following Ohio) injures or interferes with any safety-lamp, air course, or brattice, or obstructs or throws upon any doors, or disturbs any part of the machinery, or does any act whereby the security of the mines or machinery is endangered, is guilty of a misdemeanor. There, too, the endangering of the mine property is coupled with endangering the lives or health of the persons, and numerous sections may be said to look almost equally to the prevention of both. The Mining Law proper contains no reference to any exercise of the right of eminent domain, either for making openings or entering adjoining lands for any other purpose. Such rights exist,

however, in Indiana, by virtue of the common law and statutes regarding eminent domain.

Strictly speaking the clauses safeguarding the third class of property rights touched on by the mining laws are not mining laws at all -- the rights of adjoining property owners. Still such land-owners are protected by the careful court procedure provided for in connection with the exercise of the right of eminent domain, and also as "other parties interested," in connection with the map laws (to be considered later) and in connection with some laws regarding right of access to the mine. The exact relation of these statutory rights to the mining laws and the little light they can throw on these laws can be made sufficiently clear by enumerating the provisions of one set; and, as those of Ohio are more detailed than the others, we can use them as the norm. Some time before the Ohio mining law was passed (1867; 64 V. 150, sections 1 to 4; S. and S. 281), it was provided that whoever in mining coal or other materials, wilfully and without lawful authority trespasses upon the lands of another, shall be criminally liable. Since that time the definition of larceny in Ohio has been made sufficiently broad to include such an act. Still this particular section remained in force, resulting rather in the diminution of the grade of the crime and its penalty, than in the additional protection it was intended to give. By another statute, passed in 1869, anyone who states on his oath that he is the owner or authorized agent of any owner of land which he be-

lieves contains coal or any other valuable mineral substance within one mile of any shaft although it does not adjoin any mine of the owner of such shafts, may enter such mine and have an examination or survey made thereof, at any reasonable time, after giving one day's notice and in such manner as will least interfere with the working of the mine. Moreover, the person in charge of the mine, must on application of the party giving notice, transport by the ordinary method in use at such mine, for entrance and exit, a surveying party of not more than five persons, furnish to such party a competent guide and supply them with approved safety-lamps. His remuneration for this service is established by law, and any damages sustained as a result of such examination must be made good by the party demanding the survey. A penalty is imposed for hindering such examination, and a right of action is made to accrue to the party demanding it for refusal to permit it, to recover judgment as upon default in a court of competent jurisdiction against the mine-owner, in such sum as such party may declare under oath he believes to be due him for coal or other mineral belonging to him taken by the owner of such mine without his permission. If we supplement this statute with the common law rights of adjoining owners to lateral support and of surface owners to subjacent support; with the Indiana statutory provision that when two or more veins are worked in the same mine, they shall be so operated that no danger will occur to the miners working in either vein; and with the Illinois ten-foot boundary rule; we have a

fairly complete set of illustrations of the legal rights of the owners of land adjoining mines, and the slight relation of mining laws to these rights.

CHAPTER IX.

The Interests of the Public.

There still remains one group of interests that is served by mining laws, although, because of their very obviousness, they are apt to be overlooked --- the interests of the public. A few clauses in each of the mining laws look to the preservation and development of the resources of the State, to the promotion of industrial peace, and to the regulation of certain classes of labor.

Although the reports of mining commissions and mining departments have for a long time been lamenting the wastefulness of our present systems of mining coal, and recommending legislation to prohibit its continuance, very few, if indeed any, clauses have been introduced into the mining laws with the primary or direct aim of preserving the State's resources.

The Ohio Commission of 1871, adverse as they were to exercises of the police power, recommended that the General Assembly take this matter in hand and prohibit the waste by striking at the carelessness of the miners, which they blamed for it. (p. 23). With the rapid increase in the use of powder in the eighties, and with the growth of the system of leasing mining rights for a short time, the desire to get as much coal as possible in the shortest time led to the practice of leaving insufficient pillars with the result, frequently, of closing mines forever. The feelings of a practical miner on this subject are well summed up in the following paragraph written in 1891. "To review the matter in brief, it can readily be seen that the conservative and economical operator is placed at a disadvantage in the markets, when in competition with those who take the coal (that is) most convenient and of

best quality, regardless of that remaining. The value of the property in every town and of every home and business in the vicinity of the mining towns as well as the larger cities, from which they draw their supplies; the stocks and bonds ~~and~~ bonds of every railroad piercing these fields; depend upon the life of those coal fields and all are enhanced in value in proportion to the degree in which their life is prolonged. It seems to the writer that our commonwealth has rights that are paramount to the greed and titles of foreign and non-resident operators, whose sole aim is to secure the greatest amount of wealth in the shortest time possible and to retire in luxury and ease regardless of the interests of the people under whose fields nature has deposited large bodies of the finest coal in the nation. I think it is but just to ourselves and our State that the General Assembly should take hold of this matter and devise ways and means by which the greatest possible amount of our coal shall be reclaimed by passing such laws as will enforce the adoption of the most economic methods of mining our coal." (1) In 1894 and

(1) Report of the Chief Inspector of
Mines 1891.

again in 1897 Inspectors spoke of the rapidity with which the choicest coal fields were being exhausted as a result of the wasteful methods. "The greatest destruction of coal," says an Ohio District Inspector, "is due to the improvident management of the mines by which the rooms and narrow works are extended to great distances, after which they are abandoned, leaving the pillars between {them}. This is continued until the ponderous overlying mountains of stone and roof begin to move, which {phenomenon} is known as a squeeze. This frequently overrides

all of the open work until it is arrested on its upward march by the solid coal, thus burying hundred of thousands of tons of coal beyond all hope of recovery. With a view of stopping this enormous waste, an effort was made to secure a legal remedy. This has apparently subsided and the great loss of coal still exists. I believe that the matter should be kept alive until the ruinous system is eliminated from the mines of the State and the large amount of coal protected, fully one-third of which is now being sacrificed." (2) And in almost every report since then the same

(2) Report of the Chief Inspector of Mines, Ohio, for 1897, p. 135.

story has been repeated.

In Illinois the condition is even worse because of the "run-of-the-mine system" in vogue almost throughout the State. The difference between the results of that system and of those paying only for coal that runs over a prescribed screen, may be seen in the fact that the only district in Ohio employing the run-of-the-mine method was found to be in a much worse condition than any other part of that State. Not an inch of the coal mined there was undercut, and no pretense was made to do so. The proportion of slack and dust that is produced is naturally very great. In the last report of the Illinois Bureau of Labor Statistics it was shown that in the powder-using mines where machines are not employed the average output was only twenty-seven tons to the keg. (3) "These fig-

(3) In the same year the machine mines produced 101.42 tons per keg. One district (Sixth) averaged 183.78 tons per keg, over nine and one-half times the number for the Second (hand) District.

ures," says Secretary Ross, "can not be construed in any other light than (as) a criticism, either of the qualification of the

men now employed in the mines, or as a rebuke to their working methods." (4)

(4) Introduction to the Twenty-fifth Annual Coal Report.

In Indiana, as early as 1884, the wasteful methods of mining coal were lamented, but in that State the tremendous waste of natural gas that soon followed completely overshadowed the waste of coal. The General Assembly exercised its police powers to stop the waste of natural gas, but did nothing as to the waste of the coal. This is all the more remarkable in Indiana because the Department of Mining, as we have seen, is a branch of the Department of Geology and Natural Resources, parallel to the sub-department of Natural Gas the primary function of which is to prevent the waste of the natural resources of the State.

The only efforts made, then, through the mining laws in this direction have been through attempts to improve the class of workers and especially of officials employed in the mines. "The greatest need in our mines to-day", says one authority, whose words would be as true now as six years ago, "is intelligent mine bosses." (5)

(5) Ohio Mining Report, 1902.

As early as 1871, Andrew Roy advocated the establishment of a Mining Institute by the State. At that time there was not a school or technical association or institution of any kind in the State where a mine manager could be trained. In several annual reports thereafter Mr. Roy pointed out the need of schools of physics, chemistry and mining engineering, maintaining that in no other country were superintendents appointed without some kind of certificate of competency. Not, however, until 1891 during a later term of the same Inspector was an act passed "to establish a School of Mines and Mine Engineering in the Ohio Agricultural and Mechanical College."

Still no provisions were made requiring certificates of competency. And the only law ever enacted in Ohio with the object of insuring the employment of only practical miners in some of the mines, has, as we have seen, been defeated through a verbal error.

In Illinois and Indiana a stimulus to education among mine-workers and especially among mine officials was given at one time by the introduction of a system of examinations, and the issuing of certificates of competency. The wonderful increase in the number of men in these States who have registered in the correspondence schools since the passage of these laws is said to be one of the results of the stimulus. These schools follow the State examinations carefully and attempt to train the men along the lines laid down by the examining boards. Although many of the old mines that had been planned and developed without much thought were rather hopeless as far as methods of mining are concerned, many of the newer mines show great strides in the right direction. (6)

(6) Coal Report 1893, 1894, etc. See Chap. XI infra.

As to the gathering and dissemination of helpful information, we have seen how the Department in Ohio once resisted any attempts to foist such extraneous duties upon its limited inspection force. Still, the law requires District Inspectors to gather and report such "facts and information of public interest concerning the condition of mines, developing and progress of mining in their respective districts as they may think useful and proper"; and the Chief Inspector must include in his report to the Governor, an account of "the condition and operation of the different mines of the State, and the number of mines and the number of persons employed in or about such mines, the amount of coal, iron-ore, limestone, fire-clay,

or other mineral mined in the State; and for the purpose of enabling him to make such report, the owner, lessee or agent in charge of such mine, who is engaged in mining, and the owner, lessee or agent of any firm, company or corporation in charge of any fire clay, or iron ore, mined (mine ?) or any limestone, or quarry, or who is engaged in mining or producing any mineral whatsoever in this State, shall on or before the 31st day of January in every year, send to the office of the Chief Inspector of Mines, upon blanks furnished by him, a correct return specifying with respect to the year ending on the preceding 31st day of December, the quantity of coal, iron ore, fire-clay, limestone, or any other mineral product in such mine or quarry and the number of persons ordinarily employed in or about such mine, or quarry, below and above ground, distinguishing the persons and labor below ground (from those) above ground.....He shall also include in such report such facts relative to the mineral resources of the State and development of the same, as shall, in his judgment, be of public interest; he shall enumerate all accidents and the manner in which they occurred in or about the mines, and give such other information as he thinks useful and proper." (Section 293.) Section 3 of the law creating the office of Inspector had included among the subjects of his report to the Governor in general terms, "all such other information as he may think useful and proper." No means were provided, however, for the gathering of this information until 1884, when operators were prohibited from withholding such information under a penalty imposed. In 1888 the section was so amended as to require them to make the annual reports on the specific subjects mentioned in the Section quoted. (7)

(7) An interesting incident in connection with using the Mining Department as a bureau of useful information was the appropriation of some money for a cabinet of Geological specimens to be kept in the Mine Inspectors office. In accordance with the policy consistently held to by the Ohio Department, however, this fund was turned over together with all specimens collected to the Agricultural College. (Report of Mine Inspector, 1875.)

In Illinois the function of gathering statistics is even more clearly and more extensively imposed upon the Inspectors than in Ohio. The only Inspectors' reports provided for are to be made not directly to the Governor for the use of the General Assembly, but to the Secretary of the Bureau of Labor Statistics. The Inspectors must collect and tabulate upon blanks furnished by that Secretary all desired statistics of mines and miners within each of the districts, to accompany their annual reports. On the receipt of these Inspectors' Reports the Secretary of the Bureau of Labor Statistics compiles and summarizes them as a report of the Bureau. For the purpose of compiling and publishing statistics of labor and of social and industrial conditions in the State it is made the duty of every coal operator as of every other employer of coal in the State to afford to the State Commissioners of Labor or their representatives, in this case the Inspectors, every facility for procuring statistics of the wages and conditions of their employees. Substantially similar provisions for gathering statistics were embodied in the earlier law when Inspectors had to report to the Governor. Each was expected to collect and tabulate the following facts: "The number of acres of workable coal mines in his county; the number of and the thickness of the coal beds and their respective depths below the surface; how they are mined, whether by shaft, slope or drift; the number of mines in operation; the number of men employed there-

in and the aggregate yearly production in tons; together with an estimate of the amount of capital employed in coal mining in his county, and any other information relative to coal mining that he may deem necessary." In addition they were expected to furnish to the State Geologist such information as they might have obtained on these subjects when called for. According to the oldest Inspectors, however, they were rarely bothered in this way. When State Inspectors were created in 1883 their duties were quite similar. A glance at the blanks issued by the Bureau of Labor Statistics will show that the subjects covered are much broader than those dealt with in the Mining Laws proper. Thus, in the Thirteenth Biennial Report of the Bureau of Labor Statistics (1904) over five hundred pages of tabulated information gathered largely through the Mine Inspectors, deal with the working time, earnings, nativity, length of employment at present work, ages, homes owned and rented, and their values, home surroundings, conjugal conditions, children attending school, and other general information regarding the conditions of miners and other mine-workers of the State. In the very first of the Biennial Reports before State Inspectors were provided for there is printed a series of circulars sent out to miners and operators among others, differing so little in the scope of their subjects from the most recent investigations that we are justified in saying that the Bureau of Labor Statistics has controlled the gathering of information without making much change as a result of its absorbing, in a sense, the inspection force of the State.

We have already seen in our study of the general history of the Indiana mining laws, provisions for gathering and disseminating knowledge about mines and mining antedated the first mining laws by ten years. The political accident that placed the Department of Mine

Inspection under the control of the State Geologist has already been described; and the consequent over-emphasis of one phase of the Mine Inspector's duties has been suggested. Besides performing his regular duties the Mine Inspector must also collect and tabulate the following facts: "The number and thickness of each vein of {or} stratum of coal and their respective depths below the surface, which are now worked or may hereafter be worked; the kind or quality of coal; how the same is mined, whether by shaft, slope or drift; the number of mines in operation in each county; the owners thereof; the number of men employed in each mine, and the aggregate yearly production of tons from each mine; {he must} estimate the amount of capital employed at each mine and give any other information relative to coal and mining that he may deem necessary; all of which facts, so tabulated, together with a statement of the condition of mines as to safety and ventilation, he shall freely set forth in an annual report to the State Geologist." The substance of this provision (Section 20) constituted part of Sec. 20 of the original Indiana law and has been re-copied with very little change in every form of the law adopted since then.

To promote industrial peace is always looked upon as a legitimate object of legislation. In the case of mining laws the attempt to serve this end through the same machinery as that primarily intended for the administration for the main clauses of the law, was one quite characteristic of American State legislation. In the first place industrial peace is one of the remoter objects of the law, pervading almost every Section. Besides, the peculiar position of the Mine Inspectors as well informed, disinterested, easily accessible parties, would suggest them as arbitrators at once. Their chief work

of arbitration comes in as a result of the discretionary power to declare what are and what are not fit working conditions under the law. They also have special powers in connection with weighing disputes. District Inspectors in Ohio are invested with all the power and authority of county auditors as scalers of weights and measures in the different counties of the State, that is, of course, only at mines in their respective districts. The principal law on arbitration in Ohio, however, entitled "An Act to authorize the creation and to provide for the operation of tribunals of voluntary arbitration to adjust industrial disputes between employers and employed, "though called forth by a minor's strike, the stubborn Hocking Valley Strike of 1884, is too general in its application to be considered in any sense a mining law.

Illinois, going a little further than Ohio in using its inspectors as assistants to the labor commissioners, does not hesitate to make direct use of them in settling disputes. "State Inspectors of Mines are hereby made ex officio scalers of weights and measures in their respective districts, and as such are empowered to test all scales used to weigh coal at coal mines. Upon the written request of any mine owner or operator, or of ten coal miners employed at any one mine, it shall be his duty to try and prove any scale or scales at such mine against which complaint is directed, and if he shall find that they or any of them do not weigh correctly he shall call the attention of the mine owner or operator to the fact, and direct that said scale or scales be at once overhauled and readjusted so as to indicate only true and exact weights, and he shall forbid the further operation of such mine until such scales are adjusted. In the event that such tests shall conflict with any test made by any county scaler of weights, or under and by virtue of any municipal ordinance or

regulation, then the test by such Mine Inspector shall prevail."

Indiana goes even further than Illinois in making of its Inspector an arbitrator of weighing disputes. It provides that if "the weighman or checkweighman disagree, work may continue until the Inspector of Mines can be present and any erroneous weights shall arise between weighman or checkweighman or operator in any mine as to the correctness of any scales the same shall be referred to the Inspector of Mines; whose duty it shall be to see and regulate the same at once." (Sec. 9, 1905; Sec. 1, 1891) In fact it is made his duty to examine all scales used in any mines for the purpose of weighing coal taken out of said mine. "And on inspection if the scales are found incorrect and after written notice by the Inspector of Mines, it shall be unlawful for any operator to use or suffer the same to be used, until the scales are adjusted to weigh correctly." (Sec. 20, 1905; Sec. 4, 1881) In a general way all of the laws as to weighing, or for that matter all of those protecting minors in their contractual relation may be said to have as their end the promoting of industrial peace.

The third group of laws for the protection of the interests of the public relates to the labor of women and children. Here again the mining laws take up a subject dealt with in general labor laws, but because of the peculiar nature of mine work and its dangers the provisions are both older and more stringent than the general laws on the subject.

In the early Ohio law the matter was dealt with very simply: "No boy under twelve years of age shall be allowed to work in any mine, nor any minor between the ages of twelve and sixteen years, unless he can read and write, and in all cases of minors applying

for work it shall be the duty of the agent of such mine to see that the provisions of this Section are not violated." The force of this Section may be understood when we consider that it was customary to take boys into the mines to act as trappers at the age of about ten. In fact, at that time comparatively few people realized the undesirability of child labor in the mines. "The labor of the youth of our State", said the Ohio Mining Commission, 1871, "is necessary to its prosperity, and we know of nothing in mines that makes them more hurtful to the health of our children, than most of our furnaces, factories and workshops. We do not even except our farms." Most of the Officials of the United Mine-Workers, the Inspectors and Mine Officials in Ohio, Indiana and Illinois to-day, were taken into the mines at from eight to twelve years of age.

(8) The efforts made to elude this act in Ohio can easily be under-

(8) It is interesting to note in this connection that ages at which some of the men mentioned in this paper and others entered the mines: Hon. Andrew Roy, eight years; Hon. David Ross and President T. L. Lewis, nine years; Hon. Robert Watchorn, Walton Rutledge, Hon. W. B. Wilson, ten years; Hon. George Harrison, Chief Inspector of Mines in Ohio, eleven; Hon. William Scaife, twelve; John Mitchell and Hon. M. D. Hatchford, Labor Commissioner of Ohio, thirteen.

stood. Whenever the Inspector attempted to enforce the law he found parents and employers quite ready to affirm that the child in question was of the proper age. In 1887, the Inspector asked the legislature for power to qualify any statements made to him as to the age of any infant employed in the mines. Two years later a typical case revealed one of the weaknesses of the Section. The Inspector had ordered an operator to put a boy out. The bank committee objected and had the following resolution adopted: "Resolved that we, the minors, have examined Henry Hughes, and find him qualified to hold

his place in the mine. Resolved, that we, as miners of said mine, stand by the boy and can in case of accident, testify to his educational ability in reading and writing." There seemed to be some difficulty as to the meaning of the expression "read and write." Some said that writing one's name was sufficient. The Attorney-General ruled that it meant "to read and write ordinarily well." Soon additions were made to the law, both to the general act, compelling children under fourteen years of age to attend school a certain length of time each year, and to the mining code proper. The age limit was raised from twelve to fifteen years; a record of all minors employed in a mine was required; in 1900 children between the ages of fourteen and fifteen years were allowed to be employed during the vacation interim of the public schools and the record of minors was minutely described as containing the name, age, place of birth, parents' name and residence with character of employment. It was made the duty of the agent (or operator) to demand from such minor proof that he had complied with the requirements of the school laws. The Ohio mining law has never prohibited the labor of women underground, possibly because none has ever existed.

In Illinois, Section 22, of the main act now reads that "no boy under the age of sixteen years, and no woman or girl of any age shall be permitted to do any manual labor in or about any mine, and before any boy can be permitted to work in any mine he must produce to the mine manager or operator thereof an affidavit from his parent or guardian or next of kin, sworn and subscribed to before a justice of the peace or notary public, that he, the said boy, is sixteen years of age." This minimum limit was raised from twelve to fourteen years, with an educational condition in 1879; to fourteen years, un-

conditionally in 1885 and finally to sixteen years, in 1905. The provision for the affidavit dates from 1887.

The Indiana law provides that "no male persons under the age of fourteen years or female of any age shall be permitted to enter any mine in this state, for the purpose of employment therein, and the parents or guardians of boys shall be required to furnish an affidavit as to the age of said boys when there is any doubt in regard to their age, and in all cases of minors applying for work the operator of any mine shall see that the provisions of this section are not violated." Originally the law simply forbade the employment of boys under fourteen years of age and said nothing about women, because in this respect as in others the Ohio law was copied. In 1891 (Section 20), when the Indiana legislators turned to Illinois for their model, they inserted the prohibition against employing women. The age limit of fourteen years for boys was never changed in Indiana. As in Ohio, however, the Inspector found some difficulty in proving boys below the proscribed age, and for that matter, in proving that boys found about the premises were being employed at all. In 1883 the Department suggested that the law be changed to read: "That it shall not be lawful to allow any boy under fourteen years of age to go into any mine in this state or to be harbored about the premises, and in case of doubt as to any boy's age, on the part of the operators, the boy's parents or guardian shall furnish a certificate under oath that the boy is over fourteen years of age." Similar recommendations were repeated until finally by the legislation of 1889-91, the parents' or guardian's affidavit mentioned above was provided for.

In all of the three States under consideration, in spite of the competition of West Virginia, where child labor is not so rigidly

excluded, the provisions governing child labor in the mines are said to be substantially complied with, at least to the satisfaction of both miners and operators. Whether they are either adequate or adequately enforced from the point of view of the public is another question, much broader in its bearings than the mining law.

Chapter X.

The Administration of the Laws ~~th~~rough
State Officers! Inspection.

C. Administrative Provisions.

Thus far we have been considering substantive provisions of the mining laws. They picture a condition of the mines that is desired, a series of acts to insure safety and fairness that is contemplated. They are the "what" of the mining laws. The rest of our discussion is to deal with an equally important matter, the "how" of the mining laws. In fact, as many of the provisions of the mining law are not the creation of new rights, so much as the defining of old ones, the importance of administrative provisions is far greater than the early agitators for mining laws realized. The Ohio Mining Commission of 1871, it is true, recommended merely administrative provisions imposing upon operators, as they said, "if not new, at least much more definite responsibility, than before."

(Page 38.) What was actually granted, however, in the early days, was plenty of substantive law without the means of enforcing it. Thus, the first Ohio law made no provision for inspection; the first Indiana law but little provision for funds; and the first Illinois law left it entirely to the counties whether anything at all would be done to enforce it. There has, however, gradually grown up within the laws a complicated series of provisions for inspection, special modes of proced-

ure in particular cases, and penalties accompanied by reasonable appropriations and a reorganization in some respects of the inside workings of the mine for the purpose of establishing responsibility to execute the will of the State as expressed in these laws. A history of the administrative provisions carries with it by implication, a history of the administration of the law, practically an account of mining in the States under the statutes.

At present in all of the States under consideration State officials known as Mine Inspectors are provided for. Their relations with each other and with other departments of the State government, in other words the organizations of mining departments, vary in the several States as a result of local traditions.

In Ohio the Chief Inspector of Mines is the head of his department, answerable only to the Governor, by whom he is appointed by and with the consent of the Senate for a term of four years. He is empowered to appoint his own assistants, ten District Inspectors, with the approval of the Governor, each to serve for three years. (1)

(1) In the Report of the Chief Inspector of Ohio for 1891 at p. 25 attention is called to the inconvenience arising from a change of the entire force of District Inspectors in the middle of the inspection year. In arranging the terms of offices this fact should be taken into consideration. A step was taken in that direction by the General Assembly in 1891 but the Inspector thinks that the Chief Inspector's term should never expire at the same time as the men's. The first law (1874) provided for only one inspector. One assis-

tant was added in 1881. Three District Inspectors were provided for in 1884; five in 1888; seven in 1892 and ten in 1908. (H. B. No. 875 enacted at the last session.)

The only mining board of any kind provided for is a temporary board of investigators, to be appointed by the Governor, when written charges of gross neglect of duty or malfeasance in office against any inspector are made and filed with the Governor signed by not less than fifteen coal miners or one operator, to investigate the charges. (2) The

(2) Sec. 304 O. R. S. Sec. 16 of the act of 1874. The original sections provided that if the finding be against the inspector the Governor shall remove him at once. This clause was omitted in the Revision of 1880.

records show no instance of such a board being summoned, possibly because of the stringent requirements imposed on the one making the charges. There is, of course, always more or less dissatisfaction with the best of Inspectors if only because of the impossibility of pleasing both sides in an industrial quarrel at the same time. (3)

(3) Last winter threats of taking such proceedings were aired at a mine-workers' convention in Columbus, but so far nothing has come of them.

In Illinois as we have seen, there is no chief of the Department. Each of the ten (originally five, 1883) State Inspectors is separately appointed by the Governor for two years, from among those whose names have been certified by the State Mining Board. This Board itself is appointed by the Governor with the advice and consent of the Senate, to make formal in-

quiry into and pass upon the practical and technical qualifications and personal fitness of men seeking appointments as State Inspectors of mines and also of those seeking certificates of competency, as mine managers, as hoisting engineers and as mine examiners. It has five members; two practical coal miners, one practicing mine engineer and two coal operators, one of whom must be an expert mining engineer. (4)

(4) This board was created at the same time as the office of State Inspector (1883.) At first it was to be appointed by the Board of Labor Commissioners instead of by the Governor. The remarkable feature of its composition that one of the operators must be a mining expert is said to be due to the fact that the most prominent mining engineer in the State happens to be one of the operators on the Board. It was almost impossible to find an expert mining engineer who was also a hoisting engineer as formerly required. This method of solving the difficulty of having both classes of engineers represented without increasing the size of the Board was struck upon by the legislature in 1903.

But this is not the only Board that has dealings with the Mine Inspectors. The Board of Commissioners of Labor, consisting of three manual laborers, and two manufacturers or employers of labor in some productive industry, created primarily for the purpose of gathering statistics of labor, (5) not only

(5) Act of May 29, 1879. Amended May 18, 1903.

receives and compiles the reports of the Mine Inspectors but also may examine into all charges made against them by at least three coal operators or ten coal miners. If these Commissioners find that the Inspector is neglectful of his duty,

or that he is incompetent to perform the duties of his office, or that he is guilty of malfeasance in office, or guilty of any act tending to the injury of miners or operators of mines, they must declare the office of Inspector of his district vacant. We have seen in another connection how much of this confusion of departments grow out of the original desire to keep down the number of State officials. Another reminder of that form of economy, still in the law, is the provision for County Inspectors to be appointed by the proper county authorities upon written request of the State Inspector to serve as assistants to him. The chief objection to the system of inspection by county officials was that a man could be employed by the county for as few days a year as the county authorities saw fit. Such an inspector would have to rely for the rest of his employment on the operators in his county and could not well afford to antagonize them. Furthermore these officials were frequently not given enough time to do their work properly. A few sentences taken from the county inspectors' reports of 1882 (the year before the creation of State Inspectors) will make this matter clear. In the report of Peoria County we read: "An Inspector should be chosen for the year and not for any specific number of days as his duties to be properly discharged are necessarily continuous." From McDonough County: "Inspectors being miners are afraid of operators -- the State should be divided into districts and Inspectors appointed with salaries for their whole times." Clinton County and Stark County: No Inspectors appointed. Fulton County: "Compliances with the law

are not general." Grundy County (Inspector Cummings whom we have already quoted in other connections): "I had no difficulty in securing the cooperation of mine-owners in their efforts to bring up the work to the legal standards but it would require the constant attention and frequent visits of an inspector to insure and maintain safety and comfort to the men. At present this is impossible. There are twenty-nine mines in the county and the Board of Supervisors allows thirty days for inspection and allows ninety dollars for compensation! There is work enough in the field to occupy a faithful inspector the whole time and the ninety dollars would not half pay his traveling expenses. No honest or competent man can hold the office under these conditions. Yet a good inspector could do much to enhance the coal interests of this county and render good services both to operators and miners. I take occasion to suggest (that) the mining law require a mine inspector to possess the qualifications of a civil or mining engineer and to have had experience in mining or operating mines. His qualifications for such office should be established by examination before a board appointed by the Governor and then an adequate compensation should be paid for his services." In this as in many other respects the legislature of the next year acted on nearly every recommendation made by the county inspectors. Since 1883 the law of Inspectors has merely grown. It has never been radically changed or simplified. One consequence is the lack of central organization of the mining department. The resulting confusion was illustrated recently when the Governor desired a thorough investigation made into the

cause of an explosion. (6) He was forced to summon the State

(6) That at the Zeigler Mines on April 3, 1905 where fifty men were killed.

Mine Inspectors and the members of the State Mining Board and request them to act together, and the official report of the investigation had to be published by the Labor Commissioners. (7)

(7) The Indefiniteness of the situation is well illustrated by a reply of the President of the State Mining Board. When I asked what he thought of having a Chief Inspector at the head of the department, "It is not necessary," he said naively, "whenever anything out of the ordinary happens, I am usually informed." Others in the Department look upon the Secretary of the Board of Labor Commissioners as the actual head of the Department. The present incumbent (Hon. David Ross) although formerly a miner realizes the peculiarity of his situation and is occasionally embarrassed by being called upon to perform duties naturally pertaining to the office of Chief Inspector. Thus the Governor some years ago wanted a new mining bill drawn up by this office. Inspector Rutledge, when called upon for his opinion as to the advisability of having a Chief Inspector thought that for personal reasons -- there being several men in the State having an equal claim to the office -- it would be highly inadvisable to create such an office at this time, and that any attempt to create it would be vigorously opposed by the parties in interest.

Whatever the reason may be, there seems to be no dissatisfaction in Illinois over the disorganized state of its mining department and it is probable that aside from unofficial attempts at organization among the inspection corps itself, little or no change is to be expected for some time.

The Indiana Inspector of Mines is practically a Chief Inspector; his assistants, now four in number, (8) are practically

(8)

In 1886 (See report of that year) the inspector began to ask for assistants. In 1891 provisions were made for one assistant; in 1901 for two and in 1907 four.

district inspectors. He is appointed by the State Geologist from those to hold office for two years passing a special State examination. The Inspector of Mines appoints his own assistants from among those who have passed such examination touching their qualifications as may be prescribed by him. Each of these assistants is subject to the orders and directions of the Inspector of Mines and in pursuance of such orders and directions is empowered to do any and all acts and to perform any and all duties incumbent upon the Inspector of Mines. No State Board is provided for in Indiana and the duties of holding examinations and issuing certificates of competency and of service devolve upon the Inspector of Mines. (Section 20.) By a recent act, however, a committee resembling a State Board is constituted to prepare examination questions for candidates for the position of Inspector or assistant Inspector, consisting of the State Geologist and the Chemist to the State Board of Health. (9)

(9) Section 16, Act of March 9, 1907. See below.

As a great deal is made to depend on the Inspectors, each of the States has given considerable attention to the qualifications of candidates for the office. The qualifications of the Inspector laid down in the Ohio act of 1874 are that he have a knowledge of chemistry, geology and mineralogy, and a practical knowledge of the different systems of working and ventilating

coal mines, and of the nature and properties of the noxious and poisonous gases of the mines, particularly fire-damp, and of mining engineering. Substituting the words "and of the best means of preventing and removing the same," for "and mining engineering" (1884) gives us the present legal qualifications of the Chief Inspector. Nothing is said of the means of testing his ability before appointment and there is not even a requirement that he shall have served in the mines for any length of time. (10) Since the creation of the Department only two of

(10) This condition of the law was criticized in the Report of 1883, and the laws of Illinois and Colorado were printed in the annual report as models to be followed in this respect.

the Chief Inspectors, the first and the last, have been practical miners. (11) The District Inspectors, however, must be

(11) Roy: History of the Coal Mines p.432. The late R. M. Haseltine who was Inspector for over twelve years was a civil engineer. The professions of the rest do not appear in the records. It is remarkable, however, that all have belonged to the same political parties as the Governors making the appointment, excepting Roy, a Republican, appointed by Governor Allen, a Democrat. See 1906 Report p. 226 where the "D" after Roy's name is a mistake. A vigorous attempt to keep the position of Mine Inspector out of politics was made last winter in the so-called Wertz Bill in the House of Representatives and in others.

practical miners of at least five years experience and residents of the district for which appointed of at least two years standing. They must be possessed of a practical knowledge of the best mode of ventilating mines, of the means of detecting the presence of bad or foul air, noxious and poisonous gases, and of the best

means of preventing and removing the same. The only other requirements of Inspectors before entering upon the discharge of their duties relate to furnishing bonds, taking oath of office, and terminating any interest that they may have in operating a mine. The details are set forth in Section 291 of the Revised Statutes: "Before entering upon the discharge of the duties of their respective offices, the Chief Inspector and District Inspectors shall give bond to the state, the former in the sum of five thousand dollars, and the latter in the sum of two thousand dollars each, to be approved by the Governor, conditioned for the faithful performance of their duties, respectively; said bonds, with an oath of office on each, and approval of the Governor indorsed thereon, shall be forthwith deposited with the Secretary of State; the Inspectors, while in office, shall not act as agent, manager, or mining engineer for any operator, or in any way be interested in operating any mine." From the very beginning the oath and bond of five thousand dollars were required from the Chief Inspector (Section 1 of 1874), and when the first District Inspectors were added the rest of the law was enacted. (1884)

The qualifications for all Inspectors in Illinois are summed up in the following paragraph: "Persons coming before the State Mining Board as candidates for appointment as State Inspectors of mines must produce evidence satisfactory to the Board that they are citizens of this State, at least thirty years of age, that they have had a practical mining experience of ten years, and that they are men of good repute and temper-

ate habits; they must also submit to and satisfactorily pass an examination as to their practical and technical knowledge of mining engineering and mining machinery and appliances, of the proper development and operation of coal mines, of ventilation in mines, of the nature and properties of mine gases, of the geology of the coal measures in this State, and of the laws of this State relating to coal mines." (Section 7, a, based on Section 11, 1883 and 1885.) At the close of each examination for inspectors the Board certifies to the Governor the names of all candidates who have received a rating above the minimum fixed by the rules of the Board as properly qualified for the duties of inspectors. To these are added the names of those who have passed two State examinations and who have served as State Inspector for two full terms. As in Ohio, no one is eligible for appointment who has any pecuniary interest in any coal mine either as owner or employee. Those who receive appointment as State Inspectors of mines must, before entering upon their duties as such, take an oath of office, as provided for by the Constitution, and enter into a bond to the State in the sum of five thousand dollars, with sureties to be approved by the Governor, conditioned upon the faithful performance of their duties in every particular as required by this Act; said bond, with the approval of the Governor endorsed thereon, together with the oath of office, must be deposited with Secretary of State. (Sec. 12, a, based on Sec. 11 of 1883-1885). The qualifications for county inspectors are the holding of a state certificate of competency as a mine manager and a written certificate from the State Inspector of his district authorizing him to assume and discharge his duties and exercise

the powers of State Inspector in his county; he need not furnish bond but the bond of State Inspector is holden for the faithful performance of the duties of such assistant Inspector.

No one may be appointed either Inspector of Mines or assistant Inspector in Indiana who has not been a resident of the State of Indiana for at least five years immediately preceding his appointment to office, and a practical miner of at least ten years experience in actual mining. No person is eligible to hold the office of Inspector of mines or assistant Inspector of mines who is or may be pecuniarily interested in any coal mine within the State either directly or indirectly. As to the other qualifications, whereas the Ohio law enumerates what the Inspector should know without providing for any test, that of Indiana until recently provided for a test without stating in what subjects. For the Inspector of Mines all such details were left to the State Geologist, and for the Assistant Inspectors to their Chief. A recent amendment makes the requirements a little more specific for the future. "On, or before January 1, 1909, and biennially thereafter, it shall be the duty of the State geologist and chemist to the State Board of Health to prepare such a list of questions on the subjects of mine engineering, chemistry as applied to coal mining, and the practical operations of coal mining, as concerns the coal mining industry in Indiana. Those questions shall be so prepared and the answers so graded that it shall be possible for an applicant to make twenty-five (25) points on

the questions relating to mine engineering; twenty-five (25) points on the questions relating to chemistry as applied to coal mining; and fifty (50) points on the questions relating to the practical operations of coal mining." (Section 16, 1907) An examination with these questions must be conducted by the Chemist to the State Board of Health in the State Capitol. It is open to any male citizen of the state over twenty-one years of age, of good moral character, who has had at least five years' experience as a practical coal-miner. Eighty-five percent is the passing grade to admit applicants to the eligible list from which all appointments must be made. When the eligible list is exhausted appointments may be made from the list of applicants who passed the last examination, choosing the person holding the highest grade first. Before entering upon the duties of their offices the Inspector of mines and his assistants must each execute a bond payable to the State of Indiana, with good and sufficient surety, in the sum of one thousand dollars and must take and subscribe to an oath to be endorsed upon the back of each bond for the faithful performance of the duties of the office, which bond is to be approved by and filed with the Secretary of State. (Section 18 and 20 ibid.)

The powers and duties of the Inspectors are in general the same in all the States -- to do whatever is necessary for the enforcement of the law and see that infractions are punished. The several laws differ, however, in numerous details that are largely matters of emphasis.

The Ohio Inspectors are expected to devote the whole of their

time and attention of the duties of their office. Besides performing those special duties already discussed (to gather statistics, settle weighing disputes, etc.,) the District Inspectors must examine all mines in their respective districts as often as possible, to see that all the provisions of the mining law are strictly observed and carried out. They must particularly examine the works and machinery belonging to any mine. They must examine into the state and condition of the mines as to ventilation, circulation and condition of air, drainage and general security; they must make a record of all examinations of mines in their respective districts, showing the date when made, the conditions in which the mines are found, the extent to which the laws relating to mines and mining are observed or violated, the progress made in the improvement and security of life and health sought to be secured by the provisions of the mining act, number of accidents, injuries received and deaths in or about the mines, to be filed along with their statistical record on or before the first Monday of every month in the office of the Chief Inspector, to be recorded by him and so much thereof as may be of public interest to be included in his Annual Report.

"In case of any controversy or disagreement between the District Inspector and the owner or operator of any mine, or the persons working therein or in case of conditions of (or) emergencies requiring counsel, the District Inspector may call on the Chief Inspector for such assistance and counsel as may be necessary; should the District Inspector find any of the provisions of (the mining laws) violated or not complied with, by any owner, lessees,

or agent in charge of any mine, he shall immediately notify such owner, lessee or agent in charge, of such neglect or violation, and unless the same is, within a reasonable time, rectified, and the provisions fully complied with, he shall institute a prosecution under the provisions of Section six thousand eight hundred and seventy one (6871) of the Revised Statutes. The inspectors shall exercise a sound discretion in the enforcement of the provisions of this act and if in any respect (which is not provided against by, or may result from a rigid enforcement of any express provisions of this chapter), the inspector find any matter, thing or practice in or connected with any such mine, to be dangerous or defective, so as, in his opinion, to threaten or tend to the bodily injury of any person, the inspector may give notice in writing thereof to the owner, agent or manager of the mine, and shall state in such notice the particulars in which he considers such mine, or any part thereof, or any matter, thing or practice to be dangerous or defective, and require the same to be remedied. For the purpose of making the inspection and examinations provided for in this Section, the Chief Inspector and the District Inspectors shall have the right to enter any mine at all reasonable times, by night or by day, but in such manner as shall not unnecessarily obstruct the working of the mine; and the owner or agent of such mine is hereby required to furnish the means necessary for such entry and inspection." (Section 292.) The Chief Inspector must designate the counties or portions thereof in the State which shall compose the different districts and may at any time change the same.

when in his judgment the best interests of the service may require. Formerly the districts were made by law as they are still in Illinois, but as new District Inspectors were added and old districts began to lose their prominence it was found more convenient to leave these details to the Chief Inspector. It is his duty also to "issue such instructions, make such rules and regulations for the government of the District Inspectors, not inconsistent with the powers and duties vested in them by law, as shall secure uniformity of action and proceedings throughout the different districts; and he may order one District Inspector to the assistance of any other District Inspector, or make temporary transfers of District Inspectors, when, in his judgment, the efficiency or necessity of the service demands or permits, and he may, with the consent of the Governor, remove any District Inspector at pleasure; the Chief Inspector shall render such personal assistance to the District Inspectors, as they, from time to time, may require, and shall make such personal inspection of the mines as he may deem necessary, and his other duties will permit; he shall keep in his office and carefully preserve all maps, surveys and other reports and papers required by law to be filed with him and so arrange and preserve the same as (to) make them a permanent record of ready, convenient and connected references; he shall compile and consolidate the reports of District Inspectors and annually make report to the Governor of all his proceedings as well as those of the District Inspectors." This report must include beside the statistical matter referred to elsewhere an enumeration of "all accidents and the manner in which they occur in or about the mines." In it he must al-

so "give all such other information as he thinks useful and proper and make such suggestions as he deems important relative to mines and mining and any other legislation that may be necessary on the subject for the better preservation of the life and health of those engaged in such industry." These duties and powers have grown from Sections 2 and 3 of the original Inspection law, which differed from the present Sections mainly in providing for but one Inspector and no assistants and in omitting the discretionary powers of the Inspector. When District Inspectors were provided for in 1884 the matter was thrown into its present shape except for the clauses granting the discretionary powers already mentioned. This was added four years later. Its force however was not realized until about 1900 when Inspectors began, as we have seen in studying mine discipline, to make it take the place of supplementary legislation. (12)

(12) Historical data as to the performance of the above duties, e. g. the number of inspections made, numbers of scales tested etc. are contained in tabulated form in the annual Report of the Chief Inspector of Mines. 1906. See Index.

The State Inspectors of Mines of Illinois must devote their whole time and attention to the duties of their offices and must make personal inspections of every mine within their respective districts. They must see that every necessary precaution is taken to insure the health and safety of the workmen employed in such mines, and that the provisions and requirements of all the mining laws of the State are faithfully observed and obeyed, and the pen-

alties for the violation of the same promptly enforced. Their powers include the right to enter, examine and inspect, any and all coal mines and the machinery belonging thereto, at all reasonable times by day or by night, but so as not to obstruct or hinder the necessary workings of such coal mine, and the operator of every such coal mine is required to furnish all necessary facilities for making such examination and inspection. (Sec. 12 d.) The State Inspector of Mines must post in some conspicuous place at the top of each mine visited and inspected by him, a plain statement of the condition of said mine, showing what in his judgment is necessary for the better protection of the lives and health of persons employed in said mine; such statement to give the date of inspection, and be signed by the Inspector. "He shall also post a notice at the landing used by the men stating what number of men may be permitted to ride on the cage at one time and at what rate of speed men may be hoisted and lowered on the cages. He must observe especially that a proper code of signals between the engineer and top man and bottom-man is established and conspicuously posted for the information of all employees." (Sec. 12 f.) Each state inspector must at the close of the official year, to wit: after June 30 of every year, prepare and forward to the Secretary of the Bureau of Labor Statistics a formal report of his acts during the year in the discharge of his duties, with any recommendations as to legislation he may deem necessary on the subject of mining, together with the statistics spoken of elsewhere. From these reports the Bureau of Lab-

or Statistics compiles its Annual Coal Report which it submits to the Governor for the information of the General Assembly and the public.

The duties and powers of county Inspectors acting under authority from the State Inspectors are identical with those of the State Inspector just described. (13)

(13) Sec. 17 of present law based on Sec. 11-12-13 of the laws prior to 1899.

It is the duty of the Indiana Inspector of Mines to enter, examine and inspect any and all coal mines and the works and machinery belonging thereto, at any reasonable time, by day or by night, but so as not to hinder or obstruct the working of any coal mine more than is reasonably necessary in the discharge of his duties, and the operator of such coal mine is required to furnish the necessary facilities for such entry, examination and inspection. The Inspector appointed under this act must devote his entire time and attention to the duties of his office. He (or his assistants) must make personal inspection, at least three times each year, (14) of all coal mines in the state,

(14) Act of 1907 Sec. 10; in 1905 "twice."

and must see that every precaution is taken to insure the health and safety of the workmen employed in the mines, that the provisions and requirements of the several acts are faithfully carried out and that the penalties of the law are enforced against all who wilfully disobey its requirements. Each of the assistants is subject to orders and directions of the Inspector of Mines, and in pursuance of such orders and directions is empowered to perform

all duties incumbent upon the Inspector of Mines. Each of them must make a detailed and itemized report as often as required to the Inspector of Mines, of the work performed by him. From these and the statistical information which the department is required to gather, the Inspector must make up an Annual Report to the State Geologist with whose report that of the Inspector of Mines is published. (15)

(15) The Indiana Department prior to the establishment of an office in the State House suffered so much from lost records and having to start all over again several times that in 1886 a new duty was recommended to be included, among those of Inspector: "to turn over to his successor all records, statistics, papers, and reports connected with the office." See report for that year. This end was finally accomplished by furnishing an office Cf. also O. R. S. Sec. 294.

The act of 1907 extended the powers of the Inspectors considerably. It gave them full power to arrest and detain any person found violating the provisions of any mining law "or engaged in any attempt to violate any such law or part thereof, or against whom there might be found any evidence of a previous violation of such law: "Provided, however, that no such person shall be detained for any period of time longer than twenty-four hours without warrant or the filing of a charge against him in a court of competent jurisdiction. Such Inspector and each of his assistants shall also have power to immediately stop the operation of any coal mine, or part thereof, in which any dangerous or unlawful condition is found: (16) Provided, however, that where conditions exist just-

(16) See under Penalties.

ifying him to do so; he may grant a reasonable length of time for making necessary repairs. And, provided further, that where any stop is enforced, such Inspector and his assistants shall each have power to subsequently allow such mine or part of mine to be reopened when the dangerous or unlawful conditions have been remedied or removed, so that they no longer exist." Immediately after this act took effect many arrests were made by the Inspectors in accordance with the new power, (17)

(17) United Mine Workers Journal Vol. XVIII No. 7, Page 7. Within a few days thirty-six prosecutions were recorded, for drilling ahead, opening powder cans with picks, tamping with coal dust, and making a drill bit too large. Many others followed in rapid succession. Although operators were also affected, the miners seemed to feel after these prosecutions that the law fell particularly hard upon them, especially as to the size of the drill-bit to be used in boring holes. At a special convention held in Terre Haute on July 6, 1907, a committee was appointed to take steps towards having the law repealed or at least less strictly enforced. Governor Hanly and Inspector Epperson explained that the law must stand until the legislature change it. The miners tried to interpret the law as permitting a change in the form of the drill so that it would conform to the law and yet drill larger holes. They were blocked, however, by an opinion of the Attorney General published in the United Mine-Workers Journal, Vol. No. XVIII, No. XVI, Page 1.

The State Geologist and Inspector of Mines admitted that the law worked a peculiar hardship in the Block District; that it was probably not intended for that district and that there was less danger from explosion in the mines there, but said that they could grant no relief. All violators of the law would have to be prosecuted.

even where it was admitted that the law worked peculiar hardships in certain districts contrary, in all probability, to the intention of the legislature. The remarkable progress of inspection in Indiana that has taken place within one decade both because of

the increased inspection force and the increased power of the Inspector may be illustrated by reference to the fact that in the middle of the last decade of the nineteenth century, the requirements of the law were "but indifferently enforced" in that State. (18)

(18) Report of E. G. Arnot, C. and M. E. to the Bureau of Statistics and Arbitration of the Casualties Companies doing business in the United States. It is only fair, however, to state that Mr. Arnot seems to have entertained a very hazy, inaccurate notion of the inspection provisions in force in Indiana at the time. He says: "There is no Chief of the Bureau. Local Inspectors are appointed by their own districts, and report to some official at the State Capitol who is connected with the Geological Department. The State publishes no Mining Report." Three of the four statements involved are untrue, and the fourth (about the State Geologist) unnecessarily vague. Nevertheless Mr. Arnot's observations seem more trustworthy than his researches.

Other powers and duties of Inspectors are dealt with ⁱⁿ parts of this discussion with which they are more closely allied. Thus to order the removal of workmen from a mine or any part of a mine, to forbid the use of scales found inaccurate and to have a map made in default of an operator's doing so, are closely allied to penalties and similar means of enforcing the law. Acting as scaler of weights and as arbitrator in weighing disputes has been dealt with in discussing weighing and the promotion of industrial peace. The granting of certificates of service or competency - in Indiana a duty of the Inspector - will be treated in the next Section along with other matters pertaining to examinations and the granting of certificates.

CHAPTER XI.

The Administration of the Laws through State
Officers: Penalties and Appropriations.

The general penalties in Ohio for the violation of any of the mining laws contained therein are a fine or imprisonment in the county jail of not more than thirty days, or both. Originally the fine was not to exceed fifty dollars. (1874 Sec. 15.) The clause now reads "not less than fifty dollars" (Sec. 6871 O. R. S.) (1) Other penalties provided for in Ohio are a fine of one

(1) This general section on penalties applies to Sections 297 (second outlet), 298 (ventilation), 299 (safety apparatus), 300 (hoisting), 301 (Mine-bosses), 302 (child and female labor), and 305 (right of access to mines) and to the part of 6871 bearing on mine discipline. It does not apply in the case of maps, oils etc., for which special penalties are provided (see text.).

hundred dollars imposed on operators failing to comply with the requirements for reports, or making any return which to their knowledge is false in any particular; (2) a fine of from two

(2) Inserted 1888 to make the provisions for gathering information effective.

hundred to five hundred dollars at the discretion of the court when operators fail to comply with the provisions of the act to prevent explosion of dust-charged air and gas in mines, by sprinkling and removing accumulations of combustible matter; a fine of from fifty to five hundred dollars or imprisonment in the county jail from ten to sixty days, at the discretion of the court, for failing to comply with the provisions of the act for regulating the weighing of coal in mines; a fine of from twenty-five to two hundred dollars in the inoperative act in relation to the safety, competency and employment of coal miners stating when a miner may work alone; a penalty of from one hundred to two hundred dollars to be recovered in a civil action in the name of

the State for failing to seal wells or make maps of coal lands on which wells have been drilled and an additional penalty for the violation of the same provision of from fifty to two hundred dollars or imprisonment of from ten to thirty days or both in a criminal action. For any violation of the miners oil law or for permitting the use of prohibited oil with knowledge of its character, the penalty is from five dollars to fifty dollars; for selling forbidden oil in quantities exceeding five barrels at one sale, from twenty-five dollars to one hundred dollars and upon second conviction imprisonment from ten to thirty days in addition at the discretion of the court. The procedure in such action is given in the law in detail. (3) Besides these pon-

(3) "Mayors and justices of the peace shall have jurisdiction to try any violations of this section (oil laws), and their judgment shall be final. On complaint, before a mayor or justice of the peace, of a second violation of this act, involving the punishment of imprisonment, if a trial by jury be not waived, a jury shall be chosen and the case tried, after the manner provided in Section 3718 a of the Revised Statutes. All fines assessed and collected under prosecutions begun, or caused to be begun by the Chief Inspector of mines, or any District Inspector of mines, shall be paid by the court to the Chief Inspector of Mines, and by him paid into the state treasury to the credit of a fund which is hereby appropriated for the use of the Chief Inspector of Mines in prosecuting violations of this section. Any excess of fines collected over the expenses incurred in prosecutions under this section remaining at the close of the fiscal year, shall be credited to the general revenue fund of the state."

alties, in the stricter sense, other means of enforcing the law are provided in certain cases. If an owner or agent refuses to make and file a duplicate map with the Mine Inspector when requested to do so, the Inspector is authorized and required to

cause such map or maps to be made in duplicate, at the expense of said owner or agent in the name of the State Mine Inspector.

(4) Concurrently with this provision a regular penalty is

(4) The Inspector soon found that no self-respecting engineer would undertake to make such a survey against the wish of an operator. Hence the addition of the penalty.

provided for refusal after sixty days by owner or agent to make, or cause to be made, a map and the additions thereto: the agent or owner is liable in such a case to a fine of five dollars for each and every day until the map is made. The fine must be collected in the name of the State of Ohio at the suit of the State Mine Inspector, and the amount so recovered paid into the township school fund when collected. The right to make a map at the expense of the negligent owner existed from the beginning of the law of maps (1874). The additional special penalty was provided by the legislation of 1883.

In addition to all these penalties, and not in any sense taking their places or affecting any other proceedings instituted against an owner or agent, the use of a special injunction ^{is provided for} restraining the owner or agent from working or operating any mine ~~which~~ until it is made to conform to the provisions of the general mining law with respect to appliances for the safety of persons working therein. (5) This was the most general means

(5) Section 303. Till 1888 the Inspector could prevent the operator from operating the mine "with more than ten men". In that year the phrase was taken out.

in use in the early days of the law for enforcing its provisions. Usually the owner or agent would agree to comply as soon as the injunction was granted, and the Inspector would immediately re-

quest it dissolved. (6)

(6) Report of the Mine Inspector, 1877, and Statement of Andrew Roy, {Inspector at that time}.

A few of the provisions of the Ohio law do not seem to be covered by penalties. Thus, in the act of 1904 to care for injured persons at mines nothing is said of penalties for non-compliance. There is no penalty imposed upon the Inspectors for failure to perform their duties other than forfeiture of their bonds and removal in case of District Inspectors at the pleasure of the Chief Inspector with the consent of the Governor. In the case of the Chief Inspector, "removal" is mentioned as a possible cause of a vacancy in the office, but since the revision of the section treating of the Board of Examiners already spoken of, (Section 304) no special provision has been included in the law for the removal of the Chief Inspector, in case of failure to perform his duties.

Besides the penalties above enumerated, certain civil liabilities are created or defined by the statutes: "For any injury to persons or property, occasioned by any violation of this act, or any wilful failure to comply with its provisions by any owner, agent or manager of any mine, a right of action shall accrue to the party injured, for any direct damage he may have sustained thereby; and, in case of loss of life, by reason of such wilful neglect or failure, aforesaid, a right of action shall accrue to the widow and lineal heirs of the person whose life shall be lost, for like recovery of damages for the injury they have sustained." (Sec. 301, provision inserted 1888). For failure to comply with the timber provision no penalty or direct liability is imposed on operators but, on the other hand,

no minors can be held responsible for accidents which may occur in mines where these provisions have not been complied with by the owner, agent or operator. (Section 6871 clause added 1886).

(7)

(7) Still, contributory negligence has been held a valid defense in such cases. 530 OX. St. 43.

In the early days of the law the Inspector had to hire his own attorney for prosecutions under the act. (8) It was re-

(8) The Act of Jan. 31, 1873, made the Attorney-General the legal adviser of a limited number of officers of the State; the revision of 1880 gave him charge of Supreme Court cases in which the State was a party; an act of 1898 made it unlawful for any State Officer to employ any attorney or counsel except upon the recommendation of the Attorney-General and upon the written consent of the Governor; in 1904 it was made unlawful for any State officer, board, or head of any department to be represented by any other counsel than the Attorney-General. (Sec. 202 O. R. S.) Among those enumerated in Sec. 206 of the R. S. as entitled to the legal advice of the Attorney-General is the Inspector of Mines.

commended (Report, 1875) that the expenses for attorney be done away with by requiring the county prosecuting attorney to prosecute offenders. When a separate appropriation was set aside for the purpose of conducting prosecutions it was returned unexpended year after year (Report 1892, "for the fifth time.") Finally the burden of carrying on prosecutions in the courts was shifted from the Inspector to the Attorney-General and his assistants.

The general section on penalties and liabilities in the mining law of Illinois imposes a penalty of a fine not exceeding five hundred dollars (9) or imprisonment in the county jail for

(9) Originally ten to one hundred dollars;
in 1885, fifty to two hundred dollars, second
offence, one hundred to five hundred dollars.

a period not exceeding six months, or both, at the discretion of the court, for any violation of the law or any attempt to obstruct or interfere with any Inspector in the discharge of the duties imposed upon him, or any refusal to comply with the instructions of an Inspector given by authority of the mining act. As in Ohio, in addition to the general penalty, procedure by injunction is provided to restrain an operator from continuing to operate any mine in which the provisions as to escapement-shafts and ventilation are not complied with until all legal requirements are fully satisfied. (Section 33, 1899 based on Section 14 of 1872-77-83, 1885)

The procedure in case of violation is slightly different from that provided in Ohio: "Any Inspector who shall discover that any section of this act, or part thereof, is being neglected or violated, shall order immediate compliance therewith, and in case of continued failure to comply, shall, through the State's attorney, or any other attorney, in case of his failure to act promptly, take the necessary legal steps to enforce compliance therewith through the penalties herein prescribed if it becomes necessary, through the refusal or failure of the State's attorney to act, for any other attorney to appear for the State in any suit involving the enforcement of any provision of this act, reasonable fees for the services of such attorney shall be allowed by the board of supervisors, or county commissioners, in and for the county in which such proceedings are instituted," (Section 33). A more summary proceeding is provided for cases

in which the Inspector finds men working without sufficient air; he must give the mine manager or operator notice and a reasonable time in which to restore the current, and upon his or their refusal or neglect to act promptly, the Inspector may order the endangered men out of the mine. (Section 19, i. based on Sec. 4, 1887). For refusal of the operator to permit inspection the Inspector can get a special order from the court commanding the operator to permit and furnish such necessary facilities for the inspection of such coal mine, or to be adjudged to stand in contempt of court and punished accordingly. (Section 12, e 1899 original Sec. 13) For refusal to furnish the statistical information required by law, to the Inspector, an operator is adjudged guilty of a misdemeanor and subjected to a fine of one hundred dollars (Sec 12 j).

Besides the general penalties, numerous special penalties *are* scattered through the law. For failure to supply a map as required by law, a fine of one hundred dollars or less and imprisonment in the county jail, also liability for Inspector's expenses in making the map, ^{*are provided*} (Sec. 17 k, 1899, Sec. 2 of earlier forms). For the violation of the oil law the penalty is the same as in Ohio, and also for selling five barrels of oil other than that prescribed except that a "second offense" is not provided for. For violation of the powder act, the penalty is from ten dollars to one hundred dollars or imprisonment in the county jail for three months or both; for any violation of the shot-firers' act, from one hundred dollars to two hundred dollars, or imprisonment for not more than three months or both; for fraudulent weighing, from two hundred dollars to five hundred dollars, or imprisonment

for not more than 60 days or both; for owners or operators failing to comply with the provisions of the weighing act, or obstructing or hindering the carrying out of its requirements, from fifty dollars to two hundred dollars for the first offense, from two hundred dollars to five hundred dollars for the second, and for the third, not less than five hundred dollars or imprisonment in the county jail from six to twelve months.

Civil liabilities are also created for non-compliance with the law: "For any injury to person or property, occasioned by any wilful violations of this act, or wilful failure to comply with any of its provisions, a right of action shall accrue to the party injured for any direct damages sustained thereby; and, in case of loss of life by reason of such wilful violation or wilful failure as aforesaid, a right of action shall accrue to the widow of the person or persons who were, before such loss of life, dependent for support on the person or persons so killed, for a like recovery of damages for the injuries sustained by reason of such loss of life or lives, not to exceed the sum of ten thousand dollars. Provided, that every such action for damages shall be commenced within one year after the death of such person." (10)

(10) Sec. 33, originally Sec. 14 specified no amount. In 1887 the maximum was set at five-thousand dollars. In 1907 it was changed to ten thousand dollars. The proviso was added in 1907.

The general section relating to penalties in the Indiana Mining law based on that of Illinois applies to all sections of the mining act of 1905 except such as have special penalties provided for them. (11) There are, however, a few slight differences between this section and the section on penalties in the

(11) See below.

supplementary act of 1907. In the latter act the fine and imprisonment are not alternatives but imprisonment may be (super-) added; in choosing the mode of punishment discretion is given to the jury as well as the court. In other respects the 1905 provision for penalties covers both of the leading acts in relation to mining:

"Any wilful neglect, refusal or failure to do the things required to be done by any section, clause or provision of this act, on the part of the person or persons herein required to do them, or any violation of the provisions or requirements hereof, or any attempt to obstruct or interfere with any Inspector of mines in the discharge of the duties herein imposed upon him, or any refusal to comply with the instructions of an Inspector of mines by authority of this act, shall be deemed a misdemeanor punishable by a fine not exceeding five hundred dollars (\$500) or by imprisonment in the county jail for a period not exceeding six months, or both, at the discretion of the court. Provided, That the foregoing shall not apply to sections in this act which have special penalties provided for them." (Sec. 28) (12)

(12) Based on 5478 of 1881 except for imprisonment and proviso.

The special penalties provided are from five dollars to twenty-five dollars for violation of the oil law; a fine of not more than five hundred dollars, to which may be added imprisonment for not more than sixty days for neglect or failure to comply with the wash-house bill, or for injuring or destroying wash-house fittings. In case an operator refuses to furnish a map the Inspector must appoint a competent mining engineer to make

the survey and maps and to file them as required by law, and for his services he is entitled to a reasonable fee to be paid by the party whose duty it was to make such survey and map, and is given a lien on the mine and machinery to the same extent as is provided by law for other work and labor performed in and about the mines of the State. (13) Whenever the Inspector of Mines finds

(13) In 1899 the Inspector wrote of this law: "It frequently occurs that when a surveyor has been appointed to make a map of a mine, as provided by law, in case where the operator has failed or refused to do so, he is compelled to resort to the courts to secure the pay for his work; and that in such litigation, it requires a large part of the money thus earned by him to pay his attorney fees and other expenses. We recommend the law be so amended that, in case such surveyor is compelled to employ an attorney to recover pay for the services rendered in such work, he be entitled to recover a reasonable attorney fee, in addition to his compensation and costs."

men working without sufficient air or under any unsafe conditions he may as in Illinois give the operator a notice reciting the facts and allowing a reasonable time to rectify the same. If the operator fails to do so, the Inspector may order all operations stopped in the mine or part of the mine that is unsafe, until it is again put into proper condition. At the same time the Inspector must bring suit against the operator for failure to comply with the provisions of the section on ventilation (Section 11 of 1905). The law of 1907 goes even further in granting the Inspector a quasi judicial power. He may immediately (that is, without notice) stop the operation of any coal mine, or part thereof in which any dangerous or unlawful condition is found, or if he sees fit, grant a reasonable length of time for making necessary repairs. (Sec. 11 of 1907) A similar means of enforce-

ing the requirement of accurate scales is provided. After written notice that any scales have been found incorrect, is given by the Inspector, it is unlawful for any operator to use or suffer them to be used until the scales are adjusted to weigh correctly. (Section 20)

The duties and powers of seeing that all the laws relating to mines and mining, are enforced, of investigating all violations of the law relating thereto, of arresting violators, (14) of filing complaints and making affidavits against them before

(14) Since 1907.

the proper court of justice and of seeing to the enforcement of all penalties prescribed, are, as we have seen, imposed on the inspector. (15) Failure to perform these duties according to the

(15) (Sec. 11, 1905)

main act constitutes sufficient cause for his removal from office. The act of 1907 is more specific as to the punishment of an Inspector or Assistant Inspector for failure or refusal to perform any of his duties. For the first offense he is liable to a fine not to exceed five hundred dollars and upon a second conviction, to immediate removal from office. (Sec. 15, 1907)

(16)

(16) According to an account in The United Mine-Workers' Journal, May 30, 1907 taken from a Terre Haute paper the above provision had something to do with bringing about a radical change in the manner of enforcing the law.

"Great dissatisfaction had been expressed all over the district for some time as to the manner in which the mining laws were enforced, and at the last convention, held here in March, special action was taken on the matter. The official Board was instructed to prosecute the Inspector and his deputies in case they failed to enforce the law. This was the expression of a general feeling, as great loss of life re-

sulted constantly from carelessness and from infringement of the laws." The wholesale prosecutions already referred to elsewhere soon followed.

The section on liabilities for injuries as recently amended (March 9, 1907) provides "for any injury to person or persons or property occasioned by any violation of this act, or any wilful failure to comply with any of its provisions, a right of action against the operator shall accrue to the party injured for the direct injury sustained thereby; and in case of loss of life, by reason of such violation, a right of action shall accrue; first, to the widow, if any; second, if no widow, to the children, or adopted children (if any), jointly; third, if neither the foregoing classes, then to the parents jointly, or parent; fourth, or to any person or persons jointly, who were, before such loss of life, dependent for support on the person or persons killed, for like recovery of damages for the injury sustained by reason of such loss of life or lives." (17)

(17) ~~✕~~To take the place of Sec. 27 of the act of 1905 based on Sec. 15 of 1891.

The appropriations made under the mining acts have included: The salaries and necessary traveling, office and contingent expenses of the Inspectors and other officers and employees of the State and money for prosecuting violations of certain acts, ~~In-~~strument~~s~~, such as anemometers and testweights, services, such as publication, and other facilities, such as the use of rooms in the State house or elsewhere as offices, have been provided for in some cases through direct money appropriations, and in others by giving the Mining Department certain rights in things or over department already in existence.

At present in Ohio the Chief Inspector receives two thousand dollars a year (Section 1284 O. R. S.), the District Inspectors each twelve hundred dollars. Altogether about twenty thousand dollars a year are appropriated for the Department, an office is provided for the Chief Inspector in the State-house in which to keep the maps and plans of all mines in the State and all records, correspondence, papers, and apparatus and property pertaining to his duties, belonging to the State. This property must be handed over by the Inspector to his successor in office at the close of his term. District Inspectors are authorized to have offices "in such place in their respective districts as will be most central and convenient to the mining region of their respective districts" wherein to keep "all maps, plans, surveys, and other papers belonging to their offices, in such manner as shall be of easy access and convenient reference to persons entitled to examine them." The growth of the Mining Department is perhaps in no way better illustrated than by the increase in the expenditure made for it by the State. The warning of the Mining Commission of 1871 has been fulfilled to the letter: "The expenses for these State Inspectors is ostensibly small for there are but two Inspectors named in the bill; and seemingly an expense of \$6,000 per annum would cover it. But they will need an office, furniture, books and other contingencies, and in time, clerks and printing and in a very few years, their number will be increased, for it will soon be seen that two will not suffice, and the thousands of dollars with which we commence will soon swell into tens of thousands." (Page 29) Nevertheless the increase in appropriations from two thousand dollars (1874) to twenty thousand has not kept pace

with the mining industry. "The compensation paid to Ohio Mine Inspectors," says the Chief Inspector in 1906 (at p. 10), "is much less than that paid by any important mining State in the Union. In fourteen years, the wages of miners in the State, and of all those holding important positions in connection with the management of mines, has been advanced not less than 100 per cent, while that of Mine Inspectors has not changed. An Inspector no sooner becomes thoroughly efficient in his work and his services become valuable to the State, than he is offered tempting inducements to accept positions under Mining Companies, and the State is deprived of his services. An increase in the number of Inspectors (18) and increase of salary should receive consideration (18) (Granted in 1908).

by the legislature. The traveling expenses allowed the Inspectors are also wholly inadequate to meet the present demands made upon them in traveling to the mines in their districts. Not only has the cost of living increased to a marked degree, but livery hire is also much more expensive than in former years. The sum of \$75.00 per month for each Inspector should at least be allowed and provided for by the General Assembly for traveling expenses; otherwise the efficiency of the Department will be materially crippled."

We have already seen how the desire to avoid administrative expenses led to an intricate organization of the Illinois Department of Mining. (19) The State's appropriations now include

(19) The inadequacy of the county appropriations under the original system in Illinois appears throughout the Report of 1882. One county appropriated only \$4.50 for a year! (p. 107) One of the more important counties appropriated fifty dollars. According to the

law the inspectors had to furnish bond for a thousand dollars conditioned upon the faithful performance of their duties for which they were to be paid out of such sums. Only one county in 1883 saw fit to furnish its inspector with ^{such} instruments as an anemometer and a safety lamp. (See Report 1883).

the salaries of the State Mine Inspectors of the State Mining Board and of the office force of the Bureau of Labor Statistics. They also include provisions for offices, supplies and instruments of various kinds, and for publication. Each State Inspector of Mines receives as compensation for his services the sum of eighteen hundred (\$1800.00) dollars per annum, and for his traveling expenses the sum actually expended for that purpose, in the discharge of his official duties, both payable quarterly by the State Treasurer, on warrants of the Auditor of Public Accounts, from the funds in the treasury not otherwise appropriated. The amount which the county inspector receives must be fixed by the county board at not less than three dollars per day, (formerly not more than five dollars a day) to be paid out of the county treasury. The members of the State Mining Board, except the mining engineer, receive as compensation for their services the sum of five dollars each per day, for a term not exceeding one hundred days in any one year; the member performing the duties of mining engineer, on account of additional work, receives five dollars per day for a term not exceeding one hundred and twenty-five days in any one year. The members are reimbursed for such traveling expenses as may be incurred in the discharge of their duties. The salary of the Secretary is fifteen hundred (\$1500.00) dollars per annum, and he too is entitled to reimbursement for any amounts expended for actual and necessary traveling expenses

in the discharge of his duties. All such salaries and expenses of the Board and of its Secretary are payable upon vouchers duly sworn to by each and approved by the President of the Board and by the Governor. The Auditor of Public Accounts is authorized to draw his warrants on the State Treasurer for the amounts thus shown to be due, payable out of any money in the treasury, not otherwise appropriated. The appropriations of the State other than salaries are provided for as follows: "The Secretary of State shall assign to the use of the Board, suitably furnished rooms in the State House for such meetings as are held at the Capitol, and shall also furnish whatever blanks, blank books, printing and stationery, the Board may require in the discharge of its duties." "The Secretary of State shall furnish to the Inspectors, upon the requisition of the Secretary of the State Bureau of Labor Statistics, whatever printing and supplies may be required by said Inspectors in the discharge of their official duties; said instruments to be paid for on bills of particulars certified by the Secretary of State and approved by the Governor." "For the more efficient discharge of the duties herein imposed upon them, each Inspector shall be furnished at the expense of the State with an anemometer, a safety lamp and whatever other instruments may be required in order to carry into effect the provisions of this act." "The State shall also furnish each Inspector with a complete set of standard weights suitable for testing the accuracy of track scales, and of all smaller scales at mines; said test weights to be paid for on bills of particulars, certified by the Secretary of State and approved by the Governor. Such test weights shall remain in

the custody of the Inspector for use at any point within his district, and for any amounts expended by him for the storage, transportation or handling of the same, he shall be fully reimbursed upon making entry of the proper items in his quarterly expense voucher." All statistics of mines and miners, collected by the State Inspector of Mines, must be tabulated upon blanks (furnished by the Secretary of State) to accompany his Annual Report. On receipt of these reports, the Secretary of the Bureau of Labor Statistics compiles and summarizes them as the Annual Coal Reports of the Bureau. The printing and binding of these reports must be provided for "by the Commissioners of State Contracts in like manner and in like number as they provide for the publications of other official reports to the Governor."

In Indiana the desire to keep down appropriations when the mining law was enacted led to the system of making the Inspector depend for his remuneration on fees of five dollars for each inspection, to be paid by the operators. In the very first Report of the Inspector the difficulties incident upon collecting the fees were discussed. "The small operators especially," says the Inspector, "consider the tax an unfair one; the feeling is pretty general that it would be more in accordance with justice if the expense was borne by the State." (20) During the first year

(20) Report of Mine Inspector of Indiana, 1879.

one hundred and seventy-seven mines--a great many, mere country "banks"--were inspected. From the fees amounting to eleven hundred and sixty-five dollars the Inspector's expenses, amounting to six hundred and twenty-three dollars had to be taken, leaving a salary of five hundred and forty two dollars: This condition

was soon remedied when the law was revised in 1881 giving the Inspector a salary of one thousand dollars. At present salaries and reimbursements for expenses are provided for as follows:

"The Inspector of Mines shall receive as compensation for his services the sum of one thousand eight hundred dollars (\$1,800) per annum, and each assistant Inspector of Mines shall receive as compensation for his services the sum of one thousand two hundred dollars (\$1,200) per annum. And for expenses they shall receive the sum actually and necessarily expended for that purpose, in the discharge of their official duties, all to be paid quarterly by the State Treasurer from funds in the State Treasury not otherwise appropriated. All expense bills shall be sworn to and shall show the items of expense in detail. Said Inspector of Mines may also appoint a Secretary to assist him in the discharge of his duties, who shall receive a salary of six hundred dollars (\$600) per annum." (21) Indiana was at

(21) Sec. 20 of the act of 1905. Sec. 10 of the act of 1907 gives the additional assistant Inspectors the same salary as the other two. The appropriations for "expenses" were formerly limited to three hundred dollars a year. (1891) In 1897 this was reported as inadequate. Now no definite limit is set by laws.

first very reluctant to furnish the Inspectors with the instruments and facilities necessary in the discharge of their duty. Thus in 1883 after much complaint on the part of the Inspector as to the impossibility of testing scales to the satisfaction of the men without using standard weights (22) the General

(22) Inspectors were forced to test scales with "live weight," by placing a number of men on them first without a load of coal, then with a load and then with a larger load and noting the discrepancies, if any.

Assembly furnished sealed weights (23) but made no appropriation

(23) Clause embodied in Sec. 20 of the revision of 1905.

for transportation. They were accordingly placed in the Auditor's office where they still remained at the end of the next year.

Later the general appropriation for expenses was found inadequate to cover traveling expenses and leave enough for the transportation of the weights and the difficulty was finally entirely obviated, as we have seen, by requiring test weights to be kept at all mines. (24) As in Ohio the lack of provisions for an office

(24) Copying this provision as to weights, the Chief Inspector of Mines of Ohio is urging the keeping of test weights at all mines of that State.

at first created some inconveniences. In 1885 the Inspector wrote, (at page 19 of his report) "On taking the office of Inspector I received nothing whatever from my predecessor by which I could get an idea of what had been done by him, and no complete records, even of the mine owners of the State, and upon assuming the duties of the office it was as though it had just been created. Nothing had been preserved for the use of the State." One of the recommendations of the Department in 1888 read: "The office of the Inspector should be permanently located and the equipments needed by the Inspector in the discharge of his duties should be furnished by the State." One of the results of merging the Mining Department with the Department of Geology and Natural History by the legislation of 1889-1891 was to furnish an office where maps and reports could be kept. In 1897 a separate office in the State-house was set aside as an office for the Inspector of Mines. (25) Some of the appropriations of the State for the

(25) Clause now at the end of Sec. 1. of the

Revision of 1905.

Mining Department are still made through the office of the State Geologist. The most important of these is the publication of the *Annual Report*.

CHAPTER XII.

The Administration of the Laws through Mine-
Officials and Mine-workers:
Qualifications.

To supplement the work of the administrative officers appointed by the State, various requirements and duties are imposed upon the officials and others connected with mines: Qualifications are enumerated to which all applicants for certain positions of responsibility in the mines and even ordinary miners must conform. Special administrative duties similar to those of the State Inspector, such as inspection for gases, measuring the air supply and making reports of various kinds to the State, are included among the regular duties of mine-officials. Finally, by means of the posting of rules and notices of various kinds, much of the administration of the laws is placed within the hands of the mine-workers for whose benefit they were primarily created.

The Ohio law, unlike that of the other States, has practically no provisions regarding the qualifications of the men engaged in the industry. For many years, especially in the early eighties, the inspectors urged that examinations similar to those held in Pennsylvania be provided for in Ohio, (1) and

(1) Report of 1880

That certificated mine bosses be required at all mines employing more than a certain number of men. (2)

(2) Report of 1881, see also The Practical Minors Companion by Andrew Roy. (1885) chapter V pp. 154 to 157.

At the session of the General Assembly of 1882 a bill was introduced providing for certificated mine inspectors and mining bosses. Certificates were to be granted either for competency as shown in an examination or for service to such as had had two years experience previous to the passage of the bill. The miners were not very enthusiastic over this bill and most of the operators opposed it

bitterly. It was killed in the committee on Geology, Mines and Mining. Since then the question of examinations and certificates has often been urged upon the attention of the legislature, but never successfully. The only semblances of qualifications of mine-workers provided for in the Ohio laws are that the hoisting engineer be "experienced, competent and sober" without specifying any means of testing his competence, and that no inexperienced man be employed as a miner in mines not generating fire-damp. (3)

(3) See supra for Attorney-General's opinion.

In Illinois it is unlawful to employ other than certificated mine managers, hoisting engineers and mine examiners, except in cases of emergency for periods not exceeding thirty days. The certificates required must be issued under the signature and seal of the State Mining Board to all those who receive a rating above the minimum fixed by the rules of the Board. Such certificates must contain the full name, age and place of birth of the recipient, and the length and nature of his previous service in or about coal mines. The Board may exercise its discretion in issuing certificates of any class, but not without examination, to persons presenting with proper credentials, certificates issued by competent authority in other States. It may also cancel certificates for cause.

Before being examined all applicants for certificates (including applicants for Inspectors' certificates) must register their names with the secretary of the Board and file with him as credentials an affidavit as to all matters of fact establishing their right to receive the examination, and a certificate of good character and temperate habits signed in each case by at least

ten citizens living in the same place as the applicant. (4)

(4) The fees formerly required were abolished in 1907.

"Persons coming before the Board for certificates of competency as mine managers must produce evidence satisfactory to the Board that they are citizens of the State of Illinois, at least twenty-four years of age, that they have had at least four years practical mining experience, and that they are men of good repute and temperate habits; they must also submit to, and satisfactorily pass such an examination as to their experience in mines and in the management of men, their knowledge of mine machinery and appliances, the use of surveying and other instruments, the properties of mine gases, the principles of ventilation and the specific duties and responsibilities of mine managers, as the board shall see fit to impose.

"Persons seeking certificates of competency as hoisting engineers must produce evidence satisfactory to the Board that they are citizens of the United States, at least twenty-one years of age, that they have had at least two years experience as firemen or engineer of a hoisting plant, and are of good repute and temperate habits. They must be prepared to submit to and satisfactorily pass an examination as to their experience in handling hoisting machinery, and as to their practical and technical knowledge of the construction, cleaning and care and adjustment of hoisting engines, the management and efficiency of pumps, ropes, and winding apparatus and their knowledge of the laws of this State in relation to signals and the hoisting and lowering of men at mines.

"Persons seeking certificates of competency as mine examiners must produce evidence satisfactory to the Board that they are citizens of the State of Illinois, at least twenty-one years of age, and of good repute and temperate habits. They must be prepared to submit to and satisfactorily pass, an examination as to their experience in mines generating dangerous gases, their practical and technical knowledge of the nature and properties of fire-damp, the laws of this State relating to safeguards against fires from any source in mines."

The oldest of these provisions, that relating to mine managers, was approved June 18, 1891. Several years before that time most of the State Inspectors had agreed to recommend examinations and the issuing of certificates for mine managers and hoisting engineers. (5)

(5) Coal Report of the Bureau of Labor Statistics 1887. Pp. R. 53-75 Et passim.

The procedure and other details of the present law (enacted in 1899-amended in 1907) can be traced directly to the act of 1891. According to that law examinations were open to any citizen of the United States who had fulfilled certain requirements, just as the examination for hoisting engineer is today. Since then the examinations for mine manager and for mine examiner have been closed to all but citizens of Illinois. The President of the State Mining Board says that the majority of operators favor changing the requirement back to citizenship in the United States. One other requirement is looked upon by them as objectionable and even ridiculous—the requirement "to throw coal" for four years before taking the examination for mine manager. The provision practically

excludes the sons of operators from the coveted position of mine-manager and increases the opportunity of miners to rise from the ranks. Hence it is favored by mine-workers. In general the Illinois law of examinations is considered highly satisfactory and the Illinois examinations have always set a very high standard—too high, according to the miners.

The giving of certificates by the State and the limiting of the power of employers to choose men for these positions of responsibility has led to an attempt on the part of the operators to shift to others all responsibility for the negligence and carelessness of certificated men. The Illinois courts, however, refusing to follow the courts of Pennsylvania and Virginia in this regard have laid down the following principles: "The fact that the proprietor, if he employs men to act in these capacities is required to employ those who have obtained the certificates from the state mining board, is without significance. The purpose of that provision was, so far as possible, to guard against the possibility of the proprietor employing incompetent, intemperate, negligent or disreputable persons, and not to enable the operator to shift to his employees his responsibility for the management of the mine." The Supreme Court of the United States in commenting on this decision said, "In view of the ruling in Consolidated Coal Co. v. Soniger (179 Ill. 370, 374, 375. 53 N.E.733), that it is not obligatory upon a mine owner to select a particular individual, or to retain one when selected, if found incompetent, we think the act is not repugnant to the Fourteenth Amendment in any particular." (6)

(6) Wilmington Star Mining Co. v. Fulton, 27,
U. S. Sup. Ct. Reporter 412.

In an act approved on June 1st, 1908, the principle of examinations and certificates was carried a step further. This act provides that all persons seeking employment as coal miners, must hold certificates of competency from a "Minor's Examining Board" of some county of the State of Illinois. Certificates of service are to be issued to such as have been employed at least two years prior to the enactment of the law in the coal mines. These boards are to consist of three experienced miners each, appointed by the circuit judges of the judicial district in which their county lies. This law, to be enforced by the boards themselves as well as by the courts, strengthened with every conceivable administrative provision, takes the place of an act in relation to the safety and competency of coal miners approved eleven years earlier. That act had merely provided that a miner desiring to work by himself in a mine must first produce satisfactory evidence that he has worked at least two years, with or as a practical miner. For its enforcement the old act provided only that a mine manager employing any one in violation of this act be liable of a forfeiture of his certificate. The new law will in all probability be jealously guarded by the miners' unions. Operators are already complaining that the curtailment of their right to choose their own employees has been carried so far both by collective bargaining and legislation in Illinois that the greatest injustice would result from making them liable for the acts of employees, as several bills before the last legislature contemplated. (7)

(7) Letter of Glen Traer, President of the Illinois Operators' Association, cited above.

The Indiana law of examinations and certificates is much

simpler than that of Illinois. It is set forth in Section Twenty-one and Twenty-two of the revisions of 1905.

"Sec. 21. It shall be the duty of the inspector of mines to hold examinations for certificates of service and competency in each of the cities of Brazil, Terre Haute, Washington, and Evansville, and to publish notice of such examinations, stating the time and place where examinations are to be held, and shall make and publish rules and regulations under which such examination shall be conducted. For the purpose of providing for the expense of holding the examinations and issuing the certificates herein provided for, each applicant, before entering upon examination, shall pay the inspector of mines one dollar, a receipt for which must be endorsed upon each certificate before it becomes effective. ~~Examinations for certificates before it becomes effective.~~ Examinations for certificates of service or competency shall be public and open to all citizens of the United States, and at least fifteen days' notice of such examination shall be given by publication in a newspaper published in the city where such examination is to be held. No certificate shall be issued to any person entitling him to serve in more than one of the capacities set out in this Section." (8)

(8) There are none "set out in this Section".
They are set forth in the next section.

"Sec. 22. Certificates of competency shall be issued by the inspector of mines to any person who shall prove satisfactorily upon examination, either written or oral, or both, as may be prescribed by such inspector, that he is qualified by experience and technical knowledge to perform the duties of either mine boss, fire boss, or hoisting engineer. Certificates of service shall be issued by the inspector of mines to any person who shall furnish satisfactory

proof that he has been engaged as, and has successfully discharged the duties of mine boss, fire boss, or hoisting engineer at mines in this state for three years preceding the granting of such certificate. It shall be unlawful for any person to serve in the capacity of mine boss, fire boss, or hoisting engineer at any mine without having first received from the inspector of mines a certificate of service or competency. It shall be unlawful for any operator of any mine in this state to employ any person in the capacity of mine boss, fire boss, or hoisting engineer (9) unless such person has a certificate of service or competency from the inspector of mines."

(9) Engineers and operators have been disputing for some time as to whether this clause prohibits the employment of uncertificated hoisting engineers outside of regular working hours. See. U. M. W. Journal, May 30, 1907 p. 2.

The history of these sections furnishes one more illustration of how the Indiana law started as an imitation of the Ohio law and ended in resembling the Illinois law. Section 10 of the law of 1879 prohibited the employment of any "but experienced, competent and sober engineers." In the Inspector's report of 1885 it is recommended that if the Inspector is to be judge, certificates of competency should be provided for. Similar suggestions were made from time to time in later reports until a law was enacted in 1897 providing for the examination of mine bosses, fire-bosses, and hoisting engineers. The "fire-bosses" are identical with the mine examiners of the Illinois law of 1899, before which time the expression "fire-boss" was used in the Illinois law, too. The act of 1907 provided for a "service" certificate for all who had served three years as well as certificates for competency procured by examination. "We presume," said the Inspector in 1899, "that this provision

of the law is based upon the theory that such service (is) conclusive evidence of competency. Experience leads me to believe that this provision of the law ought to be changed, and that all persons engaged in those positions ought to be required to pass periodical examinations. The benefit of this change will readily suggest itself to all thoughtful persons who give the matter serious consideration. The State of Illinois has had such a law for some years (?) resulting in much good to all concerned. We would further recommend that the examinations for certificates of competency be placed in the hands of a board of examiners, composed of one operator, one miner, one mechanical engineer and the Inspector of Mines and Deputy Inspector of Mines. This might add to the efficiency and thoroughness of this work, and would probably prove more satisfactory to those who are required to submit to these examinations. At least it would free such examinations from any suspicion of favoritism." Neither of these recommendations was acted upon until March 9, 1907, when the following section embodying the first suggestion was enacted: "After the passage of this act no further certificate of service shall be issued by the inspector of mines to any person to act as mine boss, fire-boss or hoisting engineer: Provided, however, that nothing herein contained shall affect any certificate of service heretofore issued."

CHAPTER XIII.

The Administration of the Laws through Mine-Officials
and Mine-Workers: Administrative Duties.

In Ohio the inspection work of mine officials consists in examining working places every morning and measuring the air once a week. "Every working place (in mines generating fire-damp) (1) shall be carefully examined every morning with a safe-

(1) The context is not clear but the interpretation given here, based on the preceding clause, is that commonly put upon the clause in actual practice. It is clearly the meaning of the corresponding Section (9) of the law of 1874, but the limiting phrase "in all mines generating fire-damp" seems to have been intentionally omitted in the amendment of 1881, especially in view of the fact that the Report of 1880 urges such a daily inspection in all mines.

ty lamp, by a competent person or persons, before any of the workmen are allowed to enter the mine." (Sec. 298) "All safety lamps used for examining coal mines, or which are used in any coal mine, shall be the property of the owner of the mine, and shall be under the charge of the agent thereof." (Sec. 301 taken from Sec. 12 of 1874.) It is made the duty of the mining boss to keep a careful watch over the ventilating apparatus and the air-way, and to measure the ventilation at least once a week, at the inlet and outlet and also at or near the face of all the entries, and the measurements of air so made must be noted on blanks, furnished by the Chief Inspector; and on the first day of each month the mining boss of each mine must sign one of such blanks, properly filled with the said actual measurements, and forward the same to the Chief Inspector, and any mining boss making false returns is guilty of an offence against Section 301 and liable to the general penalty of the law. All of the essentials of this provision date back to 1874 (sec. 12.) The details about blanks

were added in 1878 and the specification making non-compliance a distinct offense, in 1888.

Besides the periodical reports and the annual statistical reports required from operators, occasional reports or special notices are required under certain conditions. Whenever loss of life occurs by accident connected with the working of any mine, or by explosion, the person having charge of such "give notice thereof forthwith to the inspector of mines, and to the coroner of the county in which such mine is situated, and the coroner shall hold an inquest upon the body of the person or persons whose death has been caused, and inquire carefully into the cause thereof, and shall return a copy of the findings and all the testimony to the chief inspector. The owner, agent, or manager of every mine shall within twenty-four hours next after any accident or explosion, whereby loss of life or personal injury may have been occasioned, send notice in writing to the chief inspector, and shall specify in such notice the character and cause of the accident, and the name or names of the persons killed and injured, with the extent and nature of the injuries sustained. When any personal injury, of which notice is required to be sent under this section, results in the death of the person injured, notice in writing shall be sent to the chief inspector within twenty-four hours after such death comes to the knowledge of the owner, agent, or manager; and when loss of life occurs in any mine by explosion, or accident, the owner, agent, or manager of such mine, shall notify the chief inspector to go himself, or require one of the district inspectors

to go, at once to the mine in which said death occurred, and inquire into the cause of the same, and to make a written report, fully setting forth the condition of the part of the mine where such death occurred, and cause which led to the same; which report shall be filed by the chief inspector in his office as a matter or (of) record, and for future reference." Other notices must be given to the Chief Inspector of mines:

1. "Where any change occurs in the name of any mine, or in the name of any owner, agent, or manager of any mine, or in the officers of any incorporated company which owns or operates a mine.
2. "Where any working is commenced for the purpose of opening a new shaft, slope or mine, to which this act applies.
3. "Where any mine is abandoned or the working thereof discontinued.
4. "Where the working of any mine is recommenced after any abandonment or discontinuance for a period exceeding three months.
5. "Where the pillars of a mine are about to be removed or robbed.
6. "Where a squeeze or crush, or any other cause or change may seem to affect the safety of persons employed in any mine, or where fire occurs, or a dangerous body of gas is found in any mine." (Section 301) The requirement of these occasional reports and notices dates from 1886, excepting those in the cases of changes in names, which were added in 1888. In that year the requirement of notice to the Inspector and to the county coroner

was transferred to this section from Section 2 of the original inspection law (Section 292 O. R. S.) and the details connected with the holding of the inquest added. (2) One other kind of

(2) The second report of the Inspector 1875, complained that accidents were not being reported. (Page 5.) Removing this clause from Section 292 to Section 301 brought it within the part of the law covered by the Section on penalties (6871 O. R. S.)

occasional report to the State has been required of people working at mines since 1881. Whenever a committee of miners appointed in accordance with Section 305, shall have made an inspection of the mine, it must within ten days after such inspection and measurement, make a correct report thereof to the Inspector of Mines, on blanks to be furnished by said Inspector for that purpose; and if such committee make to the Inspector a false or untrue report of the mines, such act shall constitute a violation of this Section. (Section 308) The operator or his agent must also keep a record of all minors employed by him, or by any person employed in his mine, giving the name, age, place of birth, parents' name and residence, with character of employment, and he shall demand from such minor proof that he has complied with the requirements of the school laws; and it shall be the duty of the Mine Inspector to inspect such record and to report to the Chief Inspector of Mines the number of minors employed in or about such mines and to enforce the provisions of this Section. (Section 302)

The owner or agent of a coal-mine, formerly of any coal-mine now only of those having an excavation of fifteen thousand cubic yards, must make or cause to be made an accurate map

of the working of such mine. Formerly, the minimum scale was one hundred feet to the inch, now however two hundred feet to the inch. These mines must show the area mined or excavated, and the location and connection with such excavation of the mine of the lines of all adjoining lands, and the name or names of each owner or owners, so far as known, marked on each tract. The law of 1874 required additions every four months, the present law requires them annually, or, whenever the Mine Inspector deems it necessary and so directs, semi-annually. (3) The earlier law required a copy to be

(3) In 1875 the Inspector declared that reports of extensions every four months were not necessary, and recommended a change. Although it was said in that year that maps were being "generally forwarded or promised," we soon find that the map law is "not being obeyed". (Report 1881) A reason is given in the report of 1882 on page 30. It is, "Because there are not mining engineers enough in the State to make the surveys and additions thereto (one every four months), and if there were, it would require the employment of several engineers in the Mine Inspector's Office to mark the additions on the original maps."

deposited with the Inspector and another to be kept at the mine office, the present law does not require any copy to be deposited with the Mine Inspector, except at the request of the Inspector. This request, however, is regularly sent in the form of a circular letter to all operators. The present law requires also special maps of abandoned mines to be made and filed at the office of the county recorder. Such maps must have attached thereto the sworn certificate of the mining engineer making the map, and of the mine-boss in charge of the underground workings of such mine.

The maps required to be made of coal lands on which borings have been made have already been discussed in another connection. On these the wells must be plainly marked and a copy must be filed with the Inspector of Mines. Such a map is also required of anyone "intending to begin operations on such mine."

The history of the enforcement of the map laws is clearly shown in Ohio by the number of maps filed in different years. Prior to 1884 the law was very poorly enforced. Eighty-two maps were filed in the whole decade in which the provision had been on the statute books. Year after year the reports gave little more than excuses for non-enforcement in this connection. (4)

(4) See passage cited above from Reports of 1875, 1881 and 1882. In 1884 the Inspector confesses that the map law is not enforced and says that the expense is no valid excuse.

Within the next decade two hundred more were added. According to the Chief Inspector most of these maps were incomplete, badly kept and so made that it would be hard to locate or identify the mines from them. Some of them were falling to pieces and one of the Inspectors had them carefully placed in tin boxes where they are still kept. Some day when the workings in other mines in their vicinity begin to approach the abandoned parts of the old mines represented, these maps will be needed for reference. About 1896 when the Department began seriously to turn its attention to the subject of maps (5) it found two hundred and eighty-two in the office instead of the eight

(5) See Reports of 1896 and 1897.

hundred and sixty-one that should have been filed. There were twenty-six mines on the list that had been abandoned without having been surveyed or mapped as required by law. The Department accordingly began to demand maps and specified in its demands exactly what ought to be indicated on each map, including -- besides dates and names, certificates, signatures, a north-point, section-line and other accessory matters -- a surface map showing rail and wagon-roads, streams, ponds, valleys, hills, buildings and other principal objects, and a mine map proper showing the kinds of openings and their location, the area over which coal has been exhausted, the line and extent of entries, the course and extent of rooms, the drawing of any pillars, the boundary lines of the coal rights, the limit of the coal deposit or basin, if above drainage the outcrop, the location of the fan or furnace, the air courses, the location of pump, boiler and other machinery, the line and extent of "horsebacks" or faults and of any interruption in the coal basin. During 1897 one hundred and seventy-eight good maps were made and filed, and since then the average number filed in a year has been over two hundred and fifty. In 1906 the total number in the office had reached two thousand, eight hundred and sixty-eight. As there were only about one thousand and three mines in operation in Ohio in 1906, less than half of which employed more than ten men (exactly four hundred and ninety-eight) and as four hundred and eighteen maps were

filed in that year alone, we are safe in concluding that the map law is being substantially complied with in Ohio to-day.

In Illinois even more elaborate provisions are made for reports by the operators and mine-officials to the Inspector. Besides the provisions for furnishing facilities for procuring statistics, there are, as in Ohio, provisions for measuring and reporting on ventilation, and for sending notice to the Inspector on various occasions. The measurements of the currents of air must be taken with an anemometer, at the foot of the downcast, at the foot of the upcast, and at the working-face of each division or split of the air-current. The mine-examiner must make such measurements daily and keep a record thereof in the daily book kept for that purpose. A daily record must also be kept of the conditions of the mine, for the information of the company, the Inspector and all other persons interested. (6) The mine manager must make such measure-

(6) The safety lamps used for examining mines and also those used for working therein under the orders of the Inspector must as in Ohio be the property of the operator, and remain in the custody of the mine manager, or other competent person, who must clean, fill, trim, examine and deliver the same, locked and in a safe condition, to the men, upon their request, when entering the mine, and receive the same from the men at the end of their shift. But miners are responsible for the condition and proper use of safety-lamps when in their possession.

ments of air with an anemometer at least once a week at the inlet and outlet, and keep a record of such measurements for the information of the Inspector. Once a week he must make a spec-

ial examination of the roadways leading to the escapement shaft or other opening for the safe exit of the men to the surface, and make a record of any obstructions to travel he may encounter therein, together with the date of their removal. (Section 16c) The mine manager's duties include also visiting and examining the various working places in the mines as often as practicable and instructing employees as to their respective duties. (Section 16a) He must see that the laws of ventilation, including the making of crosscuts at proper distances, and stoppings in all but the last, are complied with and, in general, keep careful watch over all ventilating apparatus and the air-currents in the mine. In case of accident to fan or machinery by which the currents are obstructed or stopped, he must at once order the withdrawal of the men and prohibit their return until thorough ventilation has been re-established. (Section 16b) Many other details of inspection are left to the mine manager. He must have the hoisting ropes carefully and frequently scrutinized, and tested, every morning before the men are lowered, by hoisting the cages. (Section 16c) He must also have the cages, safety-catches, pumps, sumps and stables examined frequently; he must have the mine examined every morning by the mine examiners before the men are allowed to go to work, and know that the top-man and bottom-man are on duty, and that sufficient lights are maintained at the top and bottom landings when the men are being hoisted and lowered. Operators must have their steam boilers thoroughly examined and inspected by a competent boiler maker or other qualified person not

an employee of theirs, as often as once every six months, and oftener if the Inspector shall deem it necessary, and the result of every such inspection must be reported on suitable blanks to the Inspector. (Section 4,i) Special reports to be followed by a prescribed procedure, similar in its broad outlines to that in vogue in Ohio, are provided for in case of loss of life or serious personal injury by reason of any explosion, or of any accident whatsoever in or connected with any coal mine. In such case it is made the duty of the operator and also of the person having charge of said mine to report that fact, without delay, to the Inspector of the district in which the mine is located. "And the said inspector shall, if he deem necessary from the facts reported, and in all cases of loss of life, immediately go to the scene of said accident and render every possible assistance to those in need. It shall moreover be the duty of every operator of a coal mine to make and preserve for the information of the inspector, and upon uniform blanks furnished by said inspector, a record of all injuries sustained by any of his employees in the pursuance of their regular occupations. If any person is killed by any explosion, or other accident, the operator must also notify the coroner of the county, or in his absence or inability to act, any justice of the peace of said county, for the purpose of holding an inquest concerning the cause of such death. At such inquest the inspector shall offer such testimony as he may be possessed of, and may question or

cross-question any witness appearing in the case. The inspector may also make any original or supplementary investigation which he may deem necessary, as to the nature and cause of any accident within his jurisdiction, and shall make a record of the circumstances attending the same, and of the result of his investigations, for preservation in the files of his office. To enable him to make such investigation he shall have power to compel the attendance of witnesses, and to administer oaths or affirmations to them, and the cost of such investigations shall be paid by the county in which such accident has occurred, in the same manner as the costs of coroner's inquests are paid." (Section 27) (7) Other reports to be made to the

(7) On May 24, 1907 an act was passed providing for the reporting, compiling and publishing of information concerning accidents and deaths by accident of employees of all kinds, including minors specifically.

Inspectors by the operators are the immediate notices required in the following cases: whenever it is intended to sink a shaft, either for hoisting or escapement purposes or to open a new mine by any process; whenever it is intended to abandon any mine or to reopen any abandoned mine; upon the appearance of any large body of fire-damp in any mine, whether accompanied by explosion or not, and upon the occurrence of any serious fire within the mine or on the surface; when the workings of any mine are approaching dangerously near any abandoned mine, believed to contain accumulations of water or of gas; and upon the accidental closing or intended abandonment of any passage-

way to an escapement outlet. (Section 26)

Every operator must furnish an accurate map or plan of his mine, drawn to a scale not smaller than two hundred feet to the inch, and as much larger as practicable, on which shall appear the name of the State, county and township in which the mine is located, the designation of the mine, name of company or owner, the certificate of the mining engineer or surveyor as to the accuracy and date of the survey, the north-point and the scale to which the drawing is made. The maps must also show all surface boundary lines, roads, streams, buildings, and landmarks; also all underground workings, location of machinery, and abandoned works. A separate and similar map, drawn to the same scale in all cases, must be made of each and every seam, and such maps must show all shafts, inclined planes or other passageways connecting the same. When a separate surface map is to be made, such map must be drawn on transparent cloth or paper, so that it can be laid upon the map of the underground workings to truly indicate the local relation of lines and objects on the surface to the excavations of the mine. Each map must also show by profile drawing and measurements, the rise and dip of the seam from the bottom of the shaft in either direction to the face of the workings. The original copies of all such maps are to be kept in the office at the mine, and true copies thereof furnished to the State Inspector of Mines for the districts in which the mines are located, and filed in the office of the county recorder, within thirty days after the com-

pletion of the same. These maps are the property of the State, in the custody of the Inspector during his term of office, to be delivered by him to his successor in office; they are to be kept in the Inspector's office, and to be open to the examination of persons interested, but only in the Inspector's presence, and no copies are to be made without the written consent of the operator or owner of the property. Extensions on maps must be made once every year prior to July 1st, and the date, changes and extensions must be entered upon the copies of the maps in the hands of the Inspector and recorder, within thirty days after the last survey. Results of final surveys of abandoned mines must be duly extended on all maps of the mine and copies thereof, so as to show all excavations and the most advanced workings of the mine, and their exact relation to the boundary or section lines on the surface. The State Inspector may order a special survey to be made, whenever, in his judgment, the safety of the workmen, the support of the surface, the conservation of the property or the safety of an adjoining mine, require it.

The enforcement of these provisions has never been uniform throughout the State owing to the fact that some Inspectors lay more stress on them than others. It is said that even when maps are furnished they are usually late and that they do not always conform in all respects to the requirements of the law. It seems, too, that where the law is enforced there is less evenness than there should be. Thus last April the Inspector of the

Springfield district made complaint and had warrants issued against nine mining concerns at once, in accordance with the amendment of the "map law of 1907 making failure to supply a map a misdemeanor." (8) The provision for maps is nevertheless

(8) Coal Mining Law Journal Vol. II No. 3,
p. 89.

less looked upon by many in Illinois as the best feature of the law. It has constituted the opening Section of the main law from the beginning and it was one of the first parts of the law in connection with which it was suggested that the exemption of small mines be stricken out, (9) because some of

(9) Report 1882, Knox County.

those mines had been worked for great distances in many directions without the slightest plan. Except for the effects of other clauses of the law on the provisions of Section One, the provisions for maps have gone through but little change and that change has been almost wholly in the direction of adding to the list of objects and facts required to be shown.

In Indiana, monthly and special reports to the Inspector are required and also the making and filing of maps as in the other States. The monthly reports must be made by the operator on or before the fifteenth day of each calendar month. They must include the following information: the number of tons of coal produced at such mine during the preceding month, the amount of wages paid employees during such month, the amount of money expended for improvements during said month, together with such

other information as may be necessary to enable said Inspector to prepare his annual report as required by law. (10) As

(10) Section 23. See discussion of the gathering of statistics.

in the other States, the mine boss must measure the air currents at least once a week at the inlet and outlet, and at or near the face of the entries; he must keep a record of such measurements, which shall be entered in a book kept for that purpose, the said book to be open for inspection of the Inspector of Mines. He must also, on or about the first day of each month, mail to the Inspector a true copy of the said air measurements, stating also the number of persons employed, in or about said mine, the number of mules and horses used and the number of days worked in each month. Blanks for this purpose are furnished by the State to the Inspector and by the Inspector to each mine boss. (Section 11) "Whenever any accident whatsoever has occurred in any mine which shall delay the ordinary and usual workings of such mine for twenty-four consecutive hours, or has resulted in such injury to any person as to cause death or require the attendance of a physician or surgeon, it shall be the duty of the person in charge of such mine to notify the Inspector of Mines of such accident without delay." (11)

(11) This provision was urged in nearly every annual report of the Department from 1879 until 1897, when it was passed.

In such case the notice must be followed by the same kind of investigation as that provided for in the other States. The

Inspector must ascertain the cause of the accident as soon as his official duties will permit. "Provided, that if loss of life shall occur by reason of any such accident said inspector shall immediately, with the coroner of the county in which such accident may have occurred, go to the scene of the accident. They shall investigate and ascertain the cause of such loss of life and have power to compel the attendance of witnesses and administer oaths or affirmations to them, and the costs of such investigations shall be paid by the county in which the accident occurred, as costs of coroners' inquests are now paid." (Section 12.)

A uniform system of reporting unsafe places is established even in the case of mine-workers finding dangerous conditions. "Whenever any person working in said mine shall learn of such unsafe place he shall at once notify the mine boss thereof and it shall be the duty of said mine boss to give him, properly filled out, an acknowledgment of such notice of the following form:

I hereby acknowledge receipt of notice from.....
of the unsafe condition of the mines as follows:.....
Dated this.....day of19...

.....
Mine Boss.

The possession by the person of such written acknowledgment shall be proof of the receipt of such notice by said mine boss whenever such question shall arise; and upon receipt of

such notice said mine boss shall at once inspect such place and proceed to put the same in good and safe condition. As soon as such unsafe place has been repaired to the approval of said mine boss, he shall then give permission for the men to return to work therein, but no person shall return to work therein until such repairs have been made and permission given."

(Sec. 12 from Sec. 4 of Act of 1897.)

The duties of the mine boss, the only official of the mine whose duties are given at length in the Indiana law, were outlined in the law of 1879 (Section 16) which provided for daily examination of ropes used for hoisting, and of all working places with a safety lamp, in mines generating fire-damp. The Illinois provision regarding the ownership and custody of such lamps was copied into the Indiana laws. Most of the other additions to the law of inspection and reports by mine officials were enacted in 1885 and 1897. The 1885 additions consisted in extending the provisions for inspection to mines not generating fire-damp and in providing the duties of inside bosses with the Pennsylvania law as a model. (12) The legislation of

(12) Indiana Report of 1884. Another detail of the Illinois law frequently advocated in Indiana deals with boiler inspection (Report 1879) by a competent boiler maker (Reports 1881 and 1883) This has never been acted on in Indiana.

1897 gave practically the law of to-day.

The provisions for maps in the Indiana law are a combination of two distinct systems: the first, requiring maps to be made by all operators; and the second, requiring them only

at the request of parties interested. The first was the system adopted in the original Indiana law; the second, in view of the fact that the first system seemed unenforceable, was substituted in the revision of 1881. A distinct law in 1897 re-enacted the original provision and the present codification has simply placed the two systems in juxtaposition. In other respects the Indiana law on maps resembles those of the other States, excepting perhaps in the authority given to mine maps as evidence in courts of justice. The present law provides that the operator of every mine shall make or cause to be made, an accurate map or plan of the workings of his mine on a scale of not less than one inch to one hundred feet, showing the area mined or excavated, the arrangement of the haulage roads, air-courses, break-throughs, brattices, air-bridges or over-casts and doors used in directing the air currents in such mine, the location and connection with such excavation of the mine of the lines of all adjoining lands with the names of the owners of such lands, so far as known, marked on the map. The map must show a complete working of the mine. When completed it must be certified to by the owner, agent or engineer making such survey of the map, to be true and correct working map of the mine. "The owner or agent (13) shall deposit with the inspector of mines a true copy of such map within thirty days af-

(13) The use of this expression instead of operators in this Section of the act of 1905 is illustrative of the carelessness with which the older law, copied from Ohio, was put together with the later law.

ter the completion of the survey of the same, the date of which shall be shown on each copy, the original map and survey to be kept at the office of such mine open for inspection of all interested persons at all reasonable times. Such map and copy thereof shall be extended each year between the first day of May and the first day of September, and shall be filed as required in making the original survey showing the exact workings of the mine at the date of the last survey. At the request of the owner of any coal mine, the owner of the land, the minors working therein, or other persons interested in the workings of such mine, the inspector of mines shall make, or cause to be made, an accurate map of the workings thereof, on a scale of not less than one inch to the one hundred feet, showing the area mined or excavated and the location and connections of the lines of all adjoining lands therewith and the names of the owners of such lands so far as known. Such map shall be sworn to by the surveyor to be a correct map of the workings of such mine, and shall be kept on file in the office of the inspector of mines for examination at all times. All expenses shall be paid by the party causing such survey and map to be made. Before a mine or any part of a mine is abandoned the owner or agent shall make a survey showing the farthest extremity of the workings of such mine, and a map thereof made and filed within thirty days thereafter at the office of the county recorder in the county where such mine is located; said map shall have attached thereto the affidavit of the mining engineer making the map, and of the mine boss

in charge of the underground workings of said mine. Such map shall be properly labeled and filed by the recorder and preserved as a part of the records of the land on which said mine is located; and the recorder shall receive for said filing from said owner or agent a fee of fifty cents. Upon payment of the fees the inspector of mines shall make, within a reasonable time, and deliver to the party so demanding the same an accurate copy of any map or plan on file in his office. The original map or plan of any coal mine, or the copy filed with the inspector of mines, or a certified copy, issued under the hand and seal of such inspector, shall be evidence in any court of justice in this state."

The same laxity as that noticed at different times in the other States with regard to the enforcement of the map law has been experienced in Indiana. In the first report of the Department the Inspector said that his call for these maps had been generally responded to, but that in his opinion many of them were mere sketches and in no sense true plans of the workings of the mines they were intended to represent. He also remarked that the natural inference from one of the Sections (Sec.6) was that the Inspector's acceptance of a plan was a guarantee of its accuracy, whereas in reality it was impossible to tell the accuracy of a map without a re-survey. From 1881 to 1897 of course, no maps were filed because none were required. The agitation for the law of 1897 began in 1895. In that year one death and several serious accidents had resulted from shots blowing

through pillars, and the Inspector looked upon maps as the best means of causing mine bosses to be more careful in driving rooms and entries. The Inspector then drafted the bill that was enacted two years later. The year after the passage of the law the Inspector reported a general compliance excepting that the furnishing of maps had been interfered with by a long strike (July 4th to middle of September.) In a few cases, where there had been wilful disregard of the law he had maps made, and promised or rather threatened to enforce the law more vigorously in the future. During the next year the same general condition continued. But in 1899 the Inspector was forced to record, "It requires a good deal of urging on the part of the Inspector of Mines to secure a compliance with the law in regard to maps." He suggested that if the persons whose duty it is to furnish the information of this character would realize its importance they would not wilfully disregard the law. Apparently very little has been done to make them "realize its importance" with the result that the map laws of Indiana are very indifferently enforced. (14)

(14) As the Reports have almost completely ignored maps since 1899, accurate statistics cannot be given. The general statement is based on information gathered from the Inspector's secretary.

One tendency in the administration of the law that has been growing in the last decade is the placing of the responsibility for the enforcement of the law on the mine-workers themselves.

This has been illustrated in the Illinois laws and the attempted Ohio laws regarding the qualification of minors, and in the Indiana law requiring notices as to dangerous places from mine-workers. It is further illustrated in the kind of legislation that is being added. Instead of emphasizing the responsibility of the operator to furnish a safe working place and safe machinery as in the older laws, the duties of miners to exercise a reasonable amount of care in their work and especially in the use of explosives has been attracting attention. In the same spirit laws have been provided for the posting of notices to reach the miners directly. In Ohio this has been provided for only through the clause giving the Inspector his discretionary powers. Still, circulars issued from the Chief Inspector's office are conspicuously posted in nearly all of the mines of the State.

In Illinois, posting of notices is required in several connections. In these respects the law of Pennsylvania served as a model. "The State Inspector of Mines shall post up in some conspicuous place at the top of each mine visited and inspected by him, a plain statement of the condition of said mine, showing what in his judgment is necessary for the better protection of the lives and health of persons employed in said mine; such statement shall give the date of inspection and be signed by the inspector. He shall also post a notice at the landing used by the men, stating what number of men may be permitted to ride on the cage at one time, and at what rate of speed men may

be hoisted and lowered on the cages. He must observe especially that a proper code of signals between the engineer and top man and bottom man is established and conspicuously posted for the information of all employees." (15) Other notices must be

(15) Sec. 12. law of 1899, see also
Section 23.

posted by the mine examiner. "As evidence of his examination of all working places, he shall inscribe on the walls of each, with chalk, the month and the day of the month of his visit.

(Sec. 18, a amended and approved May 13, 1905). When working places are discovered in which accumulations of gas, or recent falls, or any dangerous conditions exist, he shall place a conspicuous mark thereat as notice to all men to keep out, and at once report his finding to the mine manager. No one shall be allowed to remain in any part of the mine through which gas is being carried into the ventilating current, nor to enter the mine to work therein, except under the direction of the mine manager, until all conditions shall have been made safe."

"The mine examiner shall make a daily record of the conditions of the mine, as he has found it, in a book kept for that purpose, which shall be preserved in the office for the information of the company, the inspector and all other persons interested, and this record shall be made each morning before the miners are permitted to descend into the mine." (Sec. 18, b. based on amendments of 1887 to Sec. 4) The posting of rules is specifically provided for.

"It shall be the duty of every operator to post, on the

engine house and at the pit top of his mine, in such manner that the employees in the mine can read them, rules not inconsistent with this act, plainly printed in the English language, which shall govern all persons working in the mine. And the posting of such notice, as provided, shall charge all employees of such mine with legal notice of the contents thereof." (Sec. 32)

In Indiana, a few posted notices are provided for -- a copy of the signal code must be printed and conspicuously posted at the top and bottom of each shaft in the engine-room. The Legislation of 1907 added to the provision for the sprinkling of dusty mines, required upon notice from the Inspector, that copies of such notices should be posted at the mine entrance by the Inspector of Mines. The fire-boss must leave at the face of every place examined, evidence of his presence, and it is unlawful for any person to enter any mine generating fire-damp or work at any place without this warning or notice. Beyond these, the Indiana law makes but little use of posting notices as a means of reaching miners.

It thus appears that the method of enforcing the law by leaving it in the hands of those for whom it was made, has not as yet made much progress in these States. Even Illinois, which has gone furthest, is satisfied with notices in English, disregarding the great foreign element, provided for in Pennsylvania by requiring rules to be posted in various languages. (16)

(16) Bituminous Mining Laws of Pennsylvania,
Article 8, Section 5.

CHAPTER XIV.

Present Conditions and Tendencies.

The point is rapidly being reached where the central problem in the social legislation of mining is becoming a problem of educating the miners. The class of labor that is employed in the mines to-day is such that more dangers arise from its carelessness and ignorance than from those conditions that the mining laws were passed originally to remove. We have seen throughout the discussion of the substantive provisions of the law, and in a different way in our examination of the administrative provisions, that many of the Sections are either not enforced or at least, not uniformly enforced. Nevertheless, broadly speaking, ample well-distributed air currents have been made the rule rather than the exception, in the thirty-five years in which mining laws have been in existence; hoisting machinery has been made comparatively safe; the means of keeping working places safe have been provided, the means of ingress and egress and communication between parts of the mine have been improved, and steps have been taken in the direction of mine discipline and even towards improving the internal organization of the mining industry. Nevertheless as a result of the counteracting force of new conditions it is a question whether mining is becoming a safer or a more perilous industry as time goes on. A glance at the records of casualties in the three States will show an increase rather than a decrease in the proportion of casualties (1) to the number of men employed.

(1) Thus the average no: of men killed a year in the mines of each of the states in the ten years 1895-1904 is smaller than the numbers recorded for 1905-6 except in the case underlined.

	<u>Ohio</u>	<u>Illinois</u>	<u>Indiana</u>
Average 1895-1904 :	2.08	2.43	2.55
1905 :	2.68	3. 4	2.61
1906 :	2. 7	2. 5	1.63

To be more accurate the number of tons produced should also be taken into consideration. See tables in the Appendix.

The latest report (for 1906) of the Illinois Bureau of Labor Statistics sums up the present situation and gives a hint as to the next step, or at least the probable direction that mining legislation is about to take, namely, complete organization of mine-work so as to further divide functions and put the greatest responsibility on picked men. "The mere consideration for human welfare demands that an unskilled hand should not be permitted to touch a deadly explosive where the life of an innocent person may be involved. Instead of removing any of the safeguards, which recent legislation has placed about the mine workers, it will in the future be necessary, unless a different and better qualified class of men be employed, to absolutely prohibit them from handling or being in any way connected with dangerous explosives. Under the present practice the only lives endangered are those of the shot firers. While the law leaves much to their discretion in the matter of shots that ought not to be fired, they are in many instances forced to take chances, and the death roll among that class, since the new regulations became ef-

fective, indicates with what fatal results. The provisions of the law, that not more than a certain amount of powder shall be used in any one blast, have been persistently disregarded by careless, indifferent and incompetent men. As the person now designated as shot-firer has no means of determining the quantity of powder in a blast, particularly where a fuse is used, his life is in peril every time he lights a shot. The only effective way of avoiding such contingencies, thereby saving the lives of the shot firers, is to absolutely divorce the present class of miners from all contact with powder, or other explosives. This plan contemplates the employment of a corps of practical men in each mine where coal is blasted off the solid, men specially trained in that line of work, with a thorough knowledge of the power which explosives of all kinds exert, whose duty it would be to drill, prepare and explode all blasts. This system would leave to the so-called miners the work chiefly of loading coal, the only task for which most of them are adapted. Nothing short of a plan of this kind will solve the problems which the situation presents. It is useless waste of valuable time enacting laws requiring that only so much powder shall be used, that drill holes shall be made at a certain angle from the free face of the coal, etc. These are terms that only those educated in the business understand, and but very few of that class are now in the mines. Such regulations might be effective if made for the guidance of intelligent men specially fitted for that

work, but not otherwise. Objections to the plan here suggested, which is in fact but an extension and completion of the present system of shot-firing, may be urged on the ground of expense, and the disputes whether the operator, the miner, or both contribute to meet it. A sufficient reply to such an argument, if founded on facts, would be that the saving of life is a consideration more important than the saving of life is a consideration more important than the saving of dollars."

Practical men are the great need of the industry. But the conditions that have been driving such men from the mines are still too strong to permit us to hope for a direct solution of the problem. Without attempting even to enumerate these conditions their nature may be made clear by a suggestion of some of their causes. Mine-work, with all its grime and discomfort and danger, is not attractive to the younger generation of American mining families, especially after they have fulfilled the educational requirements of the law and see new opportunities open before them. In spite of the fact that unions are making it actually difficult to become a miner (2)

(2) Under the rules of the United Mine Workers, as laid down in their constitution, an outsider to get into their organization must begin as a day laborer, "day man" as he is termed. As a top day man, he can join by paying a fee of \$10.00. After two years' work as a top day man he is eligible to go into the mine and work as a bottom day man. If he takes such under-ground day work and follows it for two years he is then eligible

to go into a mining place to work with a practical miner, provided always that he can find some practical miner who is willing to take him in and agree to keep him for the two years required by law. If the applicant for membership in the Miners' Union so elects, he can begin as an underground laborer, but to join the union in that class he must pay an initiation of \$50 instead of \$10, and he must then serve two years in that station before he is eligible to go to the face to begin his two years' apprenticeship required by law. Until a few years ago a man could join the Miners' Union and go direct to the face as an apprentice by paying an initiation fee of \$100.00, provided he could find a practical miner who would agree to take him in and keep him the full two years required by law, or failing to do so return the \$100.00 fee paid by the apprentice. As the union received the \$100.00 fee, and the miner got no part of it, it is plain that this was never an easy way into the mine. At any rate, it was taken out of the miners' constitution some years ago. From Letter of the Illinois Coal Operators' Association to the General Assembly, April 20, 1907.

and that special agreements are entered into favoring the sons of miners, Americans are giving way to immigrants in this occupation. The methods of mining too, give the skilled laborer so little advantage over the "coal-butcher" that the intelligent young man is driven away from the mines. The employment of "non-practical men" is therefore necessary, (3) and the prob-

(3) Cf. Report of the Chief Inspector of Mines of Ohio for 1905 p. 29.

lem of legislation is to provide for practical officials or at least for safe men to do the dangerous work.

The fact that the attention of parties interested in mining legislation is no longer occupied with the subjects that

were agitated years ago, such as the requirement of second outlets and artificial means of creating ventilation, in itself is indicative of the improvement of conditions in those fundamental matters. They have been improved -- perhaps not altogether because of the laws -- even beyond the point hoped for by the agitators who framed the first mining laws. New conditions, more experience, and higher standards have been changing and will, no doubt, continue to change the center of gravity of mining laws.

In a work, mining laws, beginning in an attempt by miners to protect themselves against the negligence and greed of operators as a class, by providing for proper and safe working conditions have passed through intermediary stages, in which more adequate administrative provisions were added, and in which regulations of acts to be performed assumed relatively more importance than the requirement of things to be furnished. In the list of the acts regulated those of the men themselves have been given more and more prominence until the vital part of mining laws viewed as a growing organism -- their cambian layer, so to speak -- is filled with the attempt to make mine-workers careful.

END.