

COAL.

By C. E. LESHNER.

PRESENT CONDITIONS.

It is perhaps difficult for many to understand why, in view of the facts that nearly 600,000,000 tons of coal was mined and used last year and an unlimited supply is yet unmined, there should have been any trouble in getting fuel in the winter of 1916-17, or to believe that there may be trouble again next winter. A public fully informed on this matter and ready to cooperate in preventive measures will be the best means of averting serious conditions later.

Those who have been keeping in touch with conditions in the bituminous-coal industry foresaw and forecast the recent great increase in prices months ahead, but no one was so bold a year ago as to predict that in the near future prices would reach and stay at so high a level. These high prices, in conjunction with a serious shortage of coal at consuming centers, turned the thoughts of users throughout the United States to the subject of fuel and furnished a motive for many investigations, Federal, State, and municipal.

What has happened to the coal industry since the European war began is intimately and intricately tied up with the extraordinary things that have happened to all machinery of domestic production, including labor and transportation, and all these things are in one way or another related to the great war. The consumer in the United States has not had to confront the cutting off of imports of coal, for this country, above all, is self-contained in its coal supply and imports but trivial amounts. The warring nations in Europe have not called for coal as they have for foodstuffs and metal products, and coal exports to neutral countries—for instance, to South America—although increasing somewhat, have fallen far below expectations in 1914. Exports of bituminous coal were but 1,100,000 net tons greater in 1916 than in 1913, an increase of 5 per cent, and the total exports represented only 4 per cent of the production in 1916.

WHERE THE COAL GOES.

Any attempt to review the conditions that have resulted in so large an increase in output and at the same time such high prices must take

account first of the larger uses for which bituminous coal is mined. The United States Geological Survey has shown that the railroads in 1915 used 122,000,000 tons of bituminous coal and 6,000,000 tons of anthracite, or 24 per cent of the combined total production; the coke ovens required nearly 62,000,000 tons of bituminous coal; and manufacturing and power plants burned approximately 180,000,000 tons of bituminous coal and anthracite, or about 28 per cent of the output. The stimulation of any of these industries at any time increases the demand for coal; intense activity in transportation, iron business, and general manufacturing, such as began in 1915 and continues to-day, inevitably results in great activity in the coal market. A direct measure of this activity is afforded by the figures indicating production. The output of bituminous coal in the United States in 1914 was 422,000,000 tons. In 1915 it was 442,000,000 tons, an increase of 20,000,000 tons, and the output in 1916 is estimated at 509,000,000 tons, or 67,000,000 tons more than in 1915. This increase has been largely taken by the railroads, the coke ovens, and the manufacturing plants. The production of anthracite, about 88,000,000 net tons in 1916, has not varied greatly in recent years.

The quantity of coal for locomotive fuel required to move this additional output to market was in itself, of course, no inconsiderable item, and the extraordinary movement of other heavy freight to both seaboard in 1915 and 1916 called for a larger amount of engine fuel than was ever before needed. The quantity used by locomotives in 1916 exceeded that used in 1915 by 13,200,000 tons of bituminous coal and 400,000 tons of anthracite, an increase of 10 per cent.

The activity of the iron and steel business in 1915 and 1916, due largely to the over-sea demand for our products, stimulated coke production, and in 1916 the output of coke broke all records.

To produce a ton of pig iron from the ore requires an almost equal weight of coke, or about $1\frac{1}{2}$ tons of coal, and to convert the pig iron to steel and then to fabricate the steel into the form in which the greater part of it is exported requires still more fuel. The quantity of bituminous coal mined in 1916 for export directly as coal and coke and indirectly as iron and steel products was around 40,000,000 net tons. From this it is seen that the increase in output of bituminous coal has been in large measure due to the stimulus of foreign war markets for the products of the United States.

NO STORAGE AT THE SOFT COAL MINES.

The producers of Pennsylvania anthracite are able to equalize production somewhat throughout periods of unequal demand by storing a part of their coal; except at the head of the Great Lakes the producers of bituminous coal have no storage facilities. Bituminous coal must therefore be marketed as soon as it is mined, and it

is mined only as there is demand for it and as facilities are available for transporting it to market. The need or demand, then, sets a practical limit on production. For instance, in the summer the consumers of bituminous coal have minimum requirements and times are dull about the mines. In winter their requirements for fuel reach a maximum, the railroads, industrial plants, and public utilities all contributing to increase the load on the producers.

SCARCITY OF MEN AND CARS CAUSES SHORTAGE OF COAL.

That the shortage of coal in the winter of 1916-17 was not due to lack of coal in the ground nor to scarcity of mines, but to shortage of labor and insufficient transportation facilities has previously been pointed out by the Geological Survey.

The capacity of the equipped and developed bituminous coal mines in the United States is sufficient to furnish more coal than has ever been demanded and the opening and improvement of new mines is more than keeping pace with the needs of the country. To mine the coal requires an industrial army (734,000 men in 1915) and a shortage of labor involves an immediate reduction in the output of coal. The greater part of the coal (and beehive coke) produced must be transported considerable distances to reach the consumers. Any failure of the railroads to supply sufficient cars to the mines for loading or to move the loads promptly to their destination checks the production and consumption of coal.

The shortage of labor and the lack of adequate railroad service are recognized as prime causes of the coal shortage, and the reasons for these difficulties are now pretty well understood. Decreased immigration, exodus of foreign-born labor, and rapid expansion of the manufacturing industries that supply all manner of products for home consumption as well as to the warring nations, which called for greater numbers of all classes of skilled and unskilled laborers and offered them high wages, were factors that if not actually reducing the number of men employed in mining coal and in railroading certainly prevented such increases in the number of workers as the greater demands of these industries required. The lack of men has perhaps affected the production of anthracite more than the shortage of cars, but the opposite is true of bituminous coal.

The railroads failed to deliver the service asked of them in the fall and winter of 1916. Their failure in this period and to a less extent earlier in the year, as well as in the fall of 1915, has been a matter of grave concern to the country. The circumstances and conditions that in combination almost paralyzed rail transportation were many, varied, and complex; the events are still too recent to warrant conclusions as to the responsibility. Had the supply of cars been un-

limited, there would have been a shortage of locomotives; had the railroads been able to furnish and move all the cars for which there was an apparent demand, yards, switches, and even main-line tracks would have become congested. In other words, the railroads were not prepared to handle the unprecedented quantity of freight the industries were offering.

There is more to the transportation problem than moving freight from origin to destination with dispatch. Shipper and receiver of goods both play important parts. When shippers were sending trainloads of goods to the seaboard with no prospect of ships to receive them, when manufacturers were receiving carloads of coal for which they had no storage room, and when dealers, jobbers, and speculators were using cars for warehouses, they were contributing to the general confusion and helping to accentuate the shortage of cars.

SHORTAGE NEXT WINTER FEARED.

Nothing is more certain than that the country will, next winter, witness a shortage of coal perhaps more serious than in the winter just passed unless unusual efforts are made between now and next fall to prevent it. This is the opinion of the Geological Survey, shared by other competent observers. The entrance of the United States into the war has keyed all industries to a still higher pitch and has put this country on her mettle to outdo the remarkable record of the last 18 months in the production of the implements and accessories of war and in the export of goods and foodstuffs to Europe. The need of coal and coke to run the manufacturing plants and iron furnaces will be no less in the next 12 months than in the last, and probably will be even greater. The greatly increased activities of our naval forces means larger coal consumption, and the demands on the railroads for the transportation of troops and supplies will also increase the use of coal for railroad fuel.

The mines that must meet this extra demand for coal will have fewer men, for some will join the military and naval forces or go to other industries for higher wages. The railroads that move the coal from mine to consumer will have fewer men and but few additional cars and locomotives. The shortage of coal last winter was serious, even though the operators, spurred on by high prices, were putting forth every effort to meet the demand. The combined efforts of the Interstate Commerce Commission and the railroad managers did not suffice to relieve the car shortage, and at times they found it necessary to clear the tracks and give coal the right of way to keep such cities as Chicago from a fuel famine.

With the price of coal at a higher level than ever before, the coal-mine operator may be counted on to do his utmost to meet the

demand, but he can do only as much as the men at his command can do for him. On the days when no railroad cars are pushed under his tippie his mine must be idle, for he has no way to store coal, once mined. With the experience of the last six or seven months behind them, the officials of the railroads are fully alive to the situation and will be better able, next winter, to handle the problem of getting the empties to the mines and the loads to market, but with no great increase in equipment and motive power, possibly with fewer men, and certainly with more freight to handle, there is little hope that they can effect sufficient improvement in distribution to prevent congestion during the coming winter.

APPEAL TO THE CONSUMERS OF COAL.

The consumers of coal are those who suffer most when there is a shortage of fuel and prices mount to high levels. The producing and transporting ends of the business are ready and willing to do their utmost to help and yet are unable to accomplish all that is necessary; it is the duty of the consumer to lend his aid. The demand for coal is seasonal—greatest in the winter and least in the summer. It has repeatedly been shown that if some way were devised to equalize this demand, the difficulties in furnishing coal would be reduced to a minimum. Had the comparatively few million tons of coal the unsatisfied demand for which caused panic prices last winter been ordered during the preceding summer the mines could have produced it and the railroads moved it without difficulty, and much of the trouble would have been averted. The remedy is simple and well known to all familiar with the industry—coal must be stored in the summer in excess of summer requirements and at the point of consumption.

The largest individual consumers of coal are the railroads and the industrial plants. Many of these consumers have learned the necessity of storing coal and realize that in the end the cost is more than repaid. Some of the railroads have had at different times several hundred thousand tons of bituminous coal in stock piles along their routes, and the Pennsylvania System is reported to have had at times a reserve of a million tons or more. The railroads used up nearly all their stored coal last winter, but they are already beginning again to accumulate a stock. By the time snow flies, millions of tons of soft coal will be in their storage piles.

Many of the manufacturing plants and other industrial works have storage facilities, but in general these plants, particularly the smaller ones, have no storage space or means of taking care of any but current fuel requirements. They have not in the past prepared to store coal, because they were under no necessity for doing so, but

it is evident that they should prepare now. Should one-half of the larger users of steam and gas coal—that is, the industrial and public-utility companies—uniformly throughout the country have on hand by November 1 a three months' supply of coal, a big load will be taken off the railroads next winter and the coal situation will be less strenuous. It is physically impossible for many concerns to store any such quantity of coal on their premises, but every consumer should do his utmost.

Small consumers, mainly households, hotels, and schools, use annually about 100,000,000 tons of bituminous coal and anthracite, a large part of which is distributed by the city and town retail dealers. Every extra ton these dealers store this summer will help relieve the tension next winter; every ton the householder puts in his cellar before October will help the country. The proof of this statement is found in the experience of the Pennsylvania anthracite operators, who since 1902 have offered reductions in price on the domestic sizes during the summer and have thus encouraged and educated the householder and others to store all or part of their winter's supply of fuel. The result has been that the shipments of anthracite from the mines in the summer are nearly as great as in the winter.

No one should hesitate to store coal now in the belief that the price will fall next winter. It is the present disposition of the sellers of soft coal to contract or otherwise obligate themselves to deliver no more than half of their expected output in the next 12 months, whereas in the year just closed their contracts covered more than three-fourths of their expected output. The operators have taken this stand partly because of the uncertainty as to the quantity they will be able to deliver, but doubtless largely because they expect the market prices of coal to be high and they wish to have sufficient tonnage free so that they can share in these high prices. Because of the falling off in demand, the wholesale price of bituminous coal usually drops in the summer, but if the consumers buy larger quantities than ordinarily for storage, prices will not drop as much as usual during the summer, and with the winter demand lessened to the extent to which surplus coal was stored in the summer the price next winter will not rise to so high a level. In other words, production and prices will be somewhat equalized.

The larger anthracite operators have recently offered the usual April reduction of 50 cents a ton on the prepared sizes, and a reduction of 10 cents less each month until the fall and winter price is reached in September.

All users of coal should take full advantage of the summer prices. It will pay them to store coal now, whether they use bituminous or anthracite.

Uniform working time at the mines and uniform prices for coal throughout the year represent the millenium toward which the coal-mine operator, the shipper, and the responsible retail dealer have been looking. It is confidently expected that those engaged in the coal trade will give every aid and assistance to their customers and to the country in general in endeavoring to avert next winter a repetition of the coal shortage just experienced. The producer of coal will evidently profit more if he ships steadily throughout the summer than if the price later reaches unheard-of figures and he can not get his product to market.

The appeal to the consumer that he buy and store coal against the needs of next winter, and thereby personally save trouble and expense, may appear a strange call to patriotic duty, but when every consumer of coal realizes that every car of coal unloaded this summer for use next winter will release a car for other important and, perhaps, imperative needs at a time when the need is greatest, there will be no question of the wisdom of the call.

