= Breaker boy =

A breaker boy was a coal @-@ mining worker in the United States and United Kingdom whose job was to separate impurities from coal by hand in a coal breaker . Although breaker boys were primarily children , elderly coal miners who could no longer work in the mines because of age , disease , or accident were also sometimes employed as breaker boys . The use of breaker boys began in the mid @-@ 1860s . Although public disapproval of the employment of children as breaker boys existed by the mid @-@ 1880s , the practice did not end until the 1920s .

= = Coal breaking = =

Coal came into wide use in late 1590s in the United Kingdom after the island nation was widely deforested and a ban was placed on the harvesting of wood by Charles I of England so that forests could be used solely by the Royal Navy . A newly emergent middle class increasingly demanded glass for windows , and the glass @-@ making industry relied heavily on charcoal for fuel . With charcoal no longer available , this industry turned to coal . Demand for coal also increased after the invention of the reverbatory furnace and the development of methods for casting iron objects such as cannon .

The first function of a coal breaker is to break coal into pieces and sort these pieces into categories of nearly uniform size , a process known as breaking . But coal is often mixed with impurities such as rock , slate , sulphur , ash (or " bone ") , clay , or soil . Thus , the second function of a coal breaker is to remove as many impurities as economically desirable and technologically feasible , and then grade the coal based on the percent of impurities remaining . This was not necessary when coal was used in cottage @-@ industry grade production methods , but became necessary when economies of scale moved production into early factories with a larger workforce and those installations began producing glass and iron in greater quantities .

In the U.S. prior to 1830 , very little bituminous coal was mined and the fuel of the early American Industrial Revolution ? anthracite coal underwent little processing before being sent to market , which was primarily iron works and smithies producing wrought iron . The miner himself would use a sledgehammer to break up large lumps of coal , then use a rake whose teeth were set two inches apart to collect the larger pieces of coal for shipment to the surface for such were easiest to pack densely in the sack @-@ like bags that could be slung over the back , or onto a pack animal for the trip out of the mine .

The smaller lumps of coal were considered non @-@ marketable and left in the mine . Beginning about 1830 , surface processing of coal in the US began concurrent with various canal projects in Eastern Seaboard . These developments lagged behind Great Britain better matching the timing of similar developments in Continental Europe . Great Britain with its heavily deforested landscapes simply had to find economic alternatives sooner , stimulating Coal , Iron , and machine developments leading ultimately to Railroads and the infant industrial chemicals industries of the 1860s . Lumps of coal were placed on plates of perforated cast iron and " breakers " would hammer on the coal until it was in pieces small enough to fall through the holes . A second screen caught the coal , and was shaken (by hand , animal , steam , or water power) to remove the unmarketable smaller lumps . This " broken and screened " coal was worth much more than " broken " coal or lump coal for the even sizes combusted with less trouble and need for tending once past the ignition point .

= = Use of breaker boys = =

Until about 1900 , nearly all coal breaking facilities in the United States were labor @-@ intensive . The removal of impurities was done by hand , usually by breaker boys between the ages of eight and 12 years old . The use of breaker boys began around 1866 . For 10 hours a day , six days a week , breaker boys would sit on wooden seats , perched over the chutes and conveyor belts , picking slate and other impurities out of the coal . Breaker boys working on top of chutes or

conveyor belts would stop the coal by pushing their boots into the stream of fuel flowing beneath them , briefly pick out the impurities , and then let the coal pass on to the next breaker boy for further processing . Others would divert coal into a horizontal chute at which they sat , then pick the coal clean before allowing the fuel to flow into " clean " coal bins .

The work performed by breaker boys was hazardous . Breaker boys were forced to work without gloves so that they could better handle the slick coal . The slate , however , was sharp , and breaker boys would often leave work with their fingers cut and bleeding . Breaker boys sometimes also had their fingers amputated by the rapidly moving conveyor belts . Others lost feet , hands , arms , and legs as they moved among the machinery and became caught under conveyor belts or in gears . Many were crushed to death , their bodies retrieved from the gears of the machinery by supervisors only at the end of the working day . Others were caught in the rush of coal , and crushed to death or smothered . Dry coal would kick up so much dust that breaker boys sometimes wore lamps on their heads to see , and asthma and black lung disease were common . Coal was often washed to remove impurities , which created sulfuric acid . The acid burned the hands of the breaker boys .

= = Public condemnation = =

Public condemnation of the use of breaker boys was so widespread that in 1885 Pennsylvania enacted a law forbidding the employment of anyone under the age of 12 from working in a coal breaker , but the law was poorly enforced ; many employers forged proof @-@ of @-@ age documentation , and many families forged birth certificates or other documents so their children could support the family . Estimates of the number of breaker boys at work in the anthracite coal fields of Pennsylvania vary widely , and official statistics are generally considered by historians to undercount the numbers significantly . One estimate had 20 @,@ 000 breaker boys working in the state in 1880 , 18 @,@ 000 working in 1900 , 13 @,@ 133 working in 1902 , and 24 @,@ 000 working in 1907 . Technological innovations in the 1890s and 1900s (such as mechanical and water separators designed to remove impurities from coal) dramatically lowered the need for breaker boys , but adoption of the new technology was slow .

By the 1910s , the use of breaker boys was dropping because of improvements in technology , stricter child labor laws , and the enactment of compulsory education laws . The practice of employing children in coal breakers largely ended by 1920 because of the efforts of the National Child Labor Committee , sociologist and photographer Lewis Hine , and the National Consumers League , all of whom educated the public about the practice and succeeded in obtaining passage of national child labor laws .

= = Union activities = =

Breaker boys were known for their fierce independence and rejection of adult authority . Breaker boys often formed and joined trade unions , and precipitated a number of important strikes in the anthracite coal fields of Pennsylvania . Among these were the strike which culminated in the Lattimer Massacre and the Coal Strike of 1902 .