state, acts in a similar manner, especially in warm air. The workmen who dig out the pitch from the trenches are often troubled with inflammation of the eyes. The best protection is glasses set in fine wire gauze which entirely covers the eye; besides, the work should be done as much as possible at night. Instead of letting it flow into trenches, and then transporting it in loose pieces, the softer kinds are run into barrels, where it hardens.

If asphalt or pitch is subjected to dry distillation, oils containing anthracene are first given off. In most manufactories only the oil that goes over first is caught for making the anthracene used for artificial alizarin. The distillation is conducted over a direct fire in a cast iron retort, and, to aid in carrying off the oil vapor, superheated steam is passed over the surface of the pitch. After the anthracene oil has gone over, the mass remaining in the retort is too brittle and lean to be used for ordinary technical purposes. In order to restore to this residue its previous properties, it is treated with a sufficient quantity of the naphthalin obtained in distilling off the tar. If the distillation of the pitch is complete, coke is left behind. The properties of the coke depend upon the temperature to which it has been heated and the time the heat was kept up If these are insufficient, the coke consists of a dull, black, compact mass, broken by few cracks. On opening the retort, this carbon takes fire, burning with a luminous flame, which issues from the cracks. By burning it out in this way it is more perfectly coked, and this can be hastened by increasing the cracks with a crowbar, but the quality of the product would be very poor. Pitch coke, when it has not been previously hard burned, possesses the property of crumbling almost to powder when put into the fire. In consequence of this, coke burned in the above injurious manner possesses very little cohesion, and has, beside, the disadvantage of adhering tightly to the bottom and sides of the retort, so that great difficulty is experienced in breaking it off and hauling it out. The imperfectly ignited coke, after it is first extinguished, must have water poured over it from time to time, until perfectly cold, since it reignites very readily and burns with a flame. In order to prepare hard coke, after the red fumes evolved at the close of the distillation have ceased the retort must be heated to a bright red heat, and kept so at least eight hours. A complete operation lasts about twenty-four hours. A hard-burned coke adheres but slighty to the sides of the retort, possesses great cohesion, and occurs in long prismatic spinters, which can be removed from the retort almost without the use of a crowbar. Such coke does not reignite after it is once extinguished. It has a light gray color, is very dense, and does not crumble in the fire.

The author has tried various experiments with this coke in English iron work, to test its value for metallurgical purposes. The results were as follows: In cupola furnaces for smelting cast iron, and for refining wrought iron, where wood charcoal is generally used, the