

as high as 6 or 7, and even reaches 15 or 20 per cent. in certain lignites. Where large quantities of coal are consumed, therefore, a serious loss is entailed on the purchaser unless the moisture be properly determined and allowed for.

Estimation, &c., of Coke:—In this operation, a small crucible of platinum is most conveniently employed. This may consist of a couple of rather deep spoons—the larger one without a handle, so as to admit of being placed over the smaller spoon, as in the annexed figure: thus serving as a lid. The long handle of the crucible-spoon must be bent as shown in the drawing, in order that the spoon may retain an upright position when placed on the pan of the balance. The spoon-crucible of this kind employed by the writer, weighs (with its lid) only 2.33 grammes, or rather less than 36 grs. About 150 milligrammes of coal are detached as before, in several small fragments, from the assay-specimen. These may be weighed directly in the crucible, the latter being placed in the little weighing capsule of horn or brass, with its handle-support projecting over the side of this. The crucible, with its cover on, is then taken up by a convenient forceps (see the note on page 19) and brought gradually before the blowpipe to a red heat. The escaping gases will take fire and burn for a few seconds around the vessel, and a small amount of carbonaceous matter may be deposited upon the cover. This rapidly burns off, however, on the heat being continued. As soon as it disappears, the crucible is to be withdrawn from the flame, and placed on the blowpipe-anvil to cool quickly. Its weight is then ascertained: always without removing the cover. The loss, minus the weight of moisture as found by the first process, gives the amount of volatile or gaseous matter. The residue is the coke and its contained ash. The coke in some anthracites exceeds 89 or 90 per cent. In anthracitic or dry coals it usually varies from 70 to 80 per cent., and the fragments are sometimes slightly agglutinated. In ordinary bituminous or caking coals, it amounts in general to about 65 or 70 per cent., and presents a fused and mamillated surface. In cannel or gas coals, the percentage of coke may be assumed to equal 50 or 60, but it is sometimes as low as 30. The coke fragments are often partially agglutinated, but they never present a fused, globular aspect. Finally, in lignites or brown coals, the coke may vary from 25 to 50 per cent. It forms sharp-edged fragments of a dull charcoal-like appearance, without any signs of fusion.



Es
emph
with
capsu
positi
excee
powde
The p
tion a
wick c
and th
least,
above
eous p
might
must l
must b
stout p
be not

* It is
above, a
general,
lent cou
brought
tacles fo
into whi
do the s
ing, but
purposes

These
of steel
closed at
kind, the
without t
whilst th
the table.