

the first set of tubes was revived for use, when the second set became saturated.

THE PREPARATION OF THE CHARCOAL

The charcoal used in the tubes was prepared by heating fragments of cocoanut shell out of contact with air in a muffle furnace at a temperature of about 800°C. for ten hours. When cool, the pieces were crushed and screened, that which passed 10 but was retained by 30 meshes to the inch, being used.

After being put in the tubes the charcoal was again heated in vacuo. Each tube held about 30 grams.

THE REVIVIFICATION OF THE CHARCOAL

When saturated the tubes were allowed to warm up to atmospheric temperature while the gas given off was withdrawn. The tubes were raised to about 200°C. by means of cylindrical electric heaters and after half-an-hour a vacuum pump was connected and the tubes thoroughly exhausted and allowed to cool. The tests have shown that the absorptive power of the charcoal is not decreased by successive treatments, but is rather increased, a fact confirmed by Lemon¹, working on the critical temperatures at which absorbed gases are evolved from charcoal.

RESULTS

Altogether, seven runs were made, with the object of testing the efficiency of the method, the quantity of gas that could be purified by the amount of charcoal used (90 grams), the maximum rate the gas could be passed through the apparatus, and the efficacy of the revivification process. The following particulars outline the salient features of the runs:

No. of Run	Set of Charcoal tubes used	Time occupied Hours	Amount of pure gas obtained. Litres	Rate of flow. Impure gas in litres per hour	Purity %
I	1	5.62	11.1	2.38	99.9
There was no indication that the charcoal was saturated when the run was stopped.					
II	1	5.27	17.6 ¹	4.15	99.9
	2	0.83	3.9	5.60	99.9
At the end of Run I the charcoal tubes of Set 1 were only pumped out by means of aspirator bottles, accounting for low figure for saturation.					
III	1	3.27	23.6 ¹	8.65	99.9
	2	1.5	7.0	5.60	99.9
IV	1	3.82	21.3 ¹	6.95	99.9
	2	1.05	7.2	8.20	99.9
V	1	2.00	16.7	10.0	99.9
VI	1	3.16	25.0 ¹	9.50	99.9
VII	1	2.15	21.2 ¹	10.9	99.9

¹ Signifies that the charcoal was saturated.

¹ Lemon. *Physical Review* 9, p. 336, 1917.