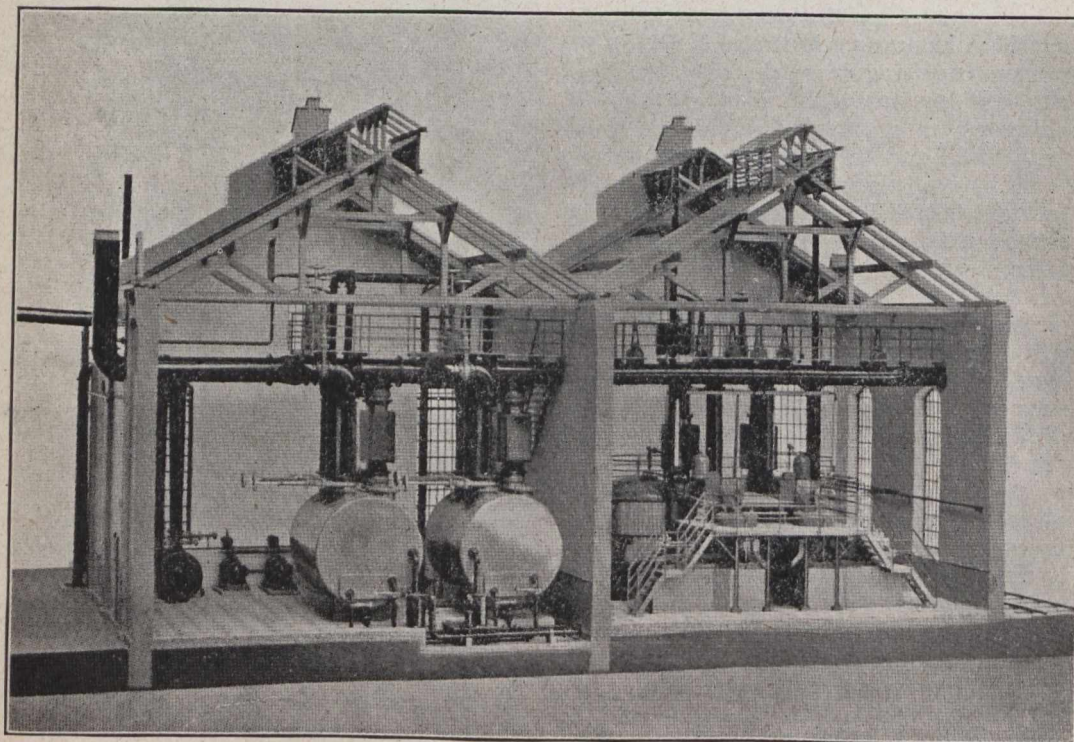
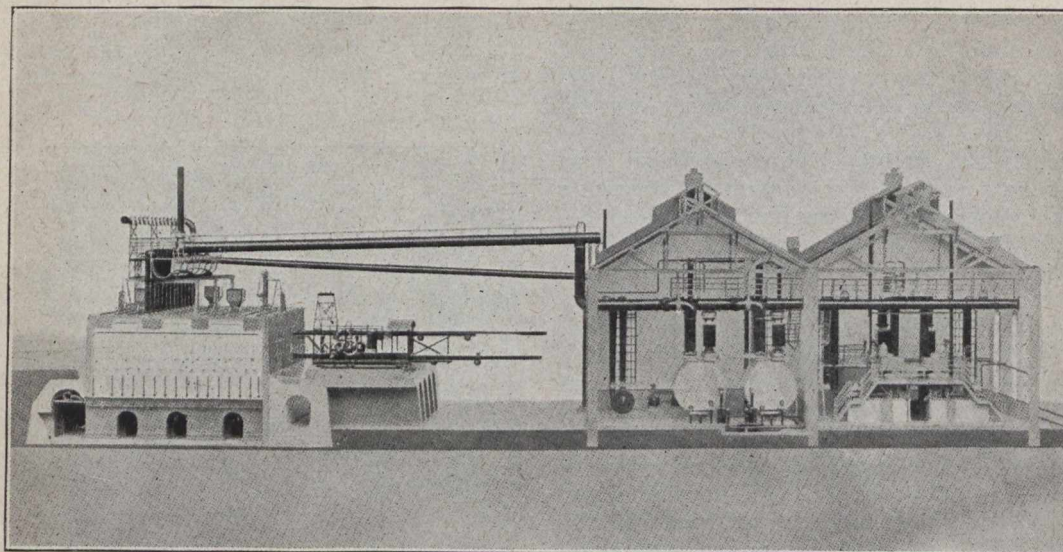


The writer has found that this point turns on the percentage of ammonia present in the coal; very small quantities of condensings containing fixed ammonia salts are produced in the foul gas mains and sprays, and these have to be worked off in the saturator. If the amount of ammonia in the coal is below the equivalent of 1 per cent. of sulphate, the reaction heat in the saturator is insufficient to evaporate these condensings when put into the saturator, and a small amount of steam has to be supplied to the vessel to keep up the

said to have effected very great economy. At Auchengleich, the first Otto direct recovery plant in Great Britain, where the yield of sulphate of ammonia is approximately 1.5 per cent. on the coal, the writer found the following temperatures:

Gas entering sprays	93	deg. C.
Gas entering exhauster (after sprays)	65½	deg. C.
Gas leaving exhauster	66	deg. C.*
Gas leaving saturator	70½	deg. C.*
Gas delivered to ovens	62	deg. C.



Otto-Hilgenstock Direct Recovery Process

temperature. If the sulphate of ammonia exceeds 1 per cent. the reaction heat is sufficient to evaporate the condensings without need for supplementary steam. Under the worst conditions the writer found in Westphalia that one ton of steam per ton of sulphate made was required for the Otto saturator, and since eight tons are required for heating up the liquor from the old recovery method, Otto's worst conditions may be

It will thus be seen that so far from the saturator losing heat, the temperature rises, and there is no need for the application of auxiliary steam in evaporating the condensings, and this is the case for all coals containing 1 per cent. of sulphate and over.

It has been further alleged that the Otto sprays do

*Gain in temperature by reaction heat 4½ deg. C.