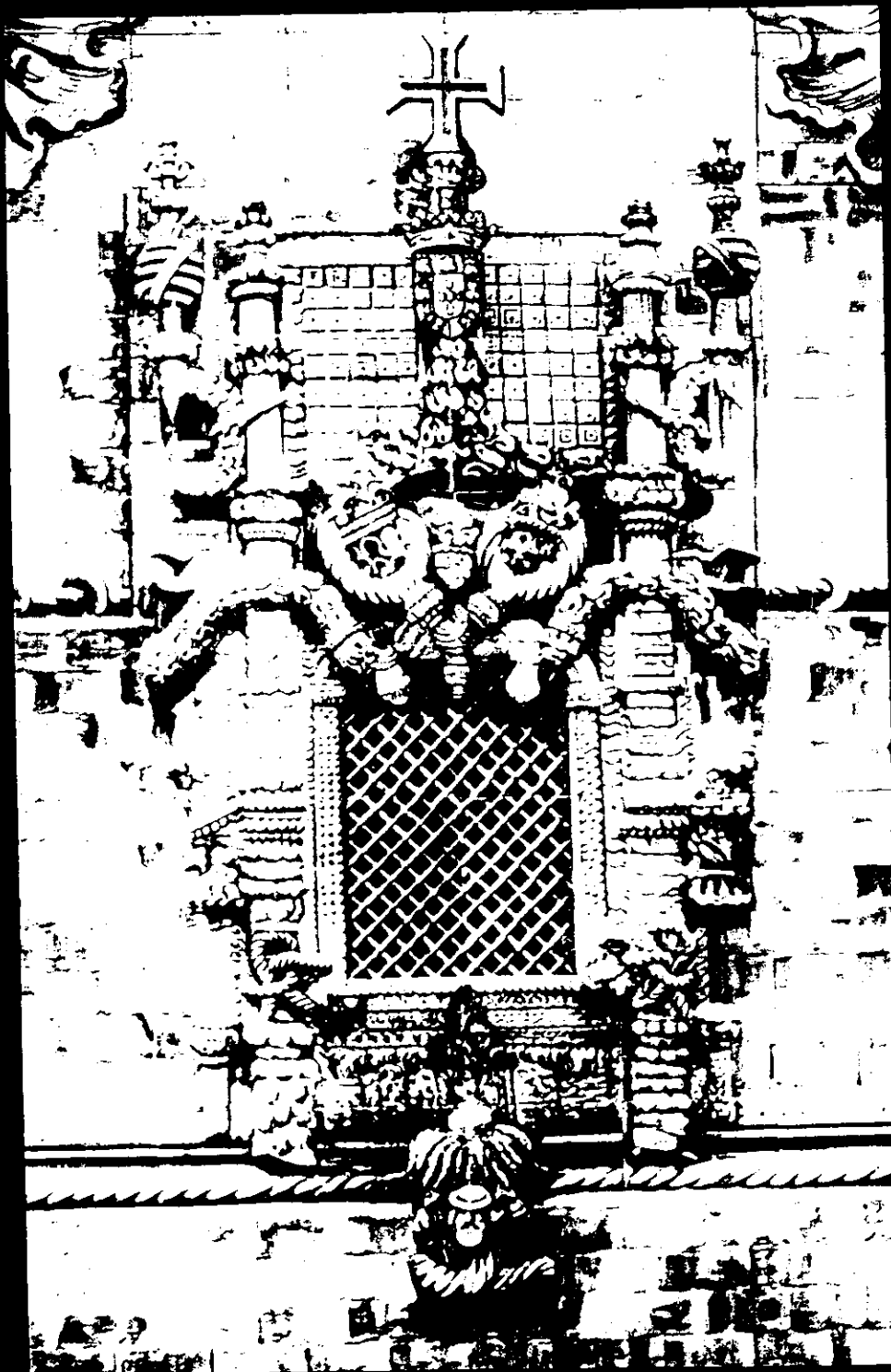


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CHLORO- AND NITRO- AROMATIC DEGRADATION
BY MICROORGANISMS ON GAC BIOFILM REACTORS

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Several microbial consortia capable of degrading either chloro- or nitroaromatic compounds (chlorophenol, nitrophenol, chlorobenzene) were isolated, by batch enrichment, from a chloroaromatic contaminated site in Northern Portugal. The degradation kinetics of the aromatic compounds were determined, when supplied to the microbial populations both individually and as mixtures.

A biofilm was established on a packed-bed granular activated carbon (GAC) column reactor. Inoculum for the column was supplied from the batch grown chlorophenol degrading bacterial consortia, using a closed recirculation system. The formation of the biofilm at different depths along the length of the column was monitored by Confocal Laser Scanning Microscopy (CLSM) and Scanning Electron Microscopy (SEM). The column was supplied with a continuous flow of chlorophenol contaminated water when microscopy studies demonstrated that a suitable biofilm had been established. Chlorophenol disappearance and chloride liberation were monitored. The effect of chlorophenol adsorption to GAC both prior to and after inoculation and the effect of different supplied chlorophenol concentrations, on the development of biofilm communities was also investigated.