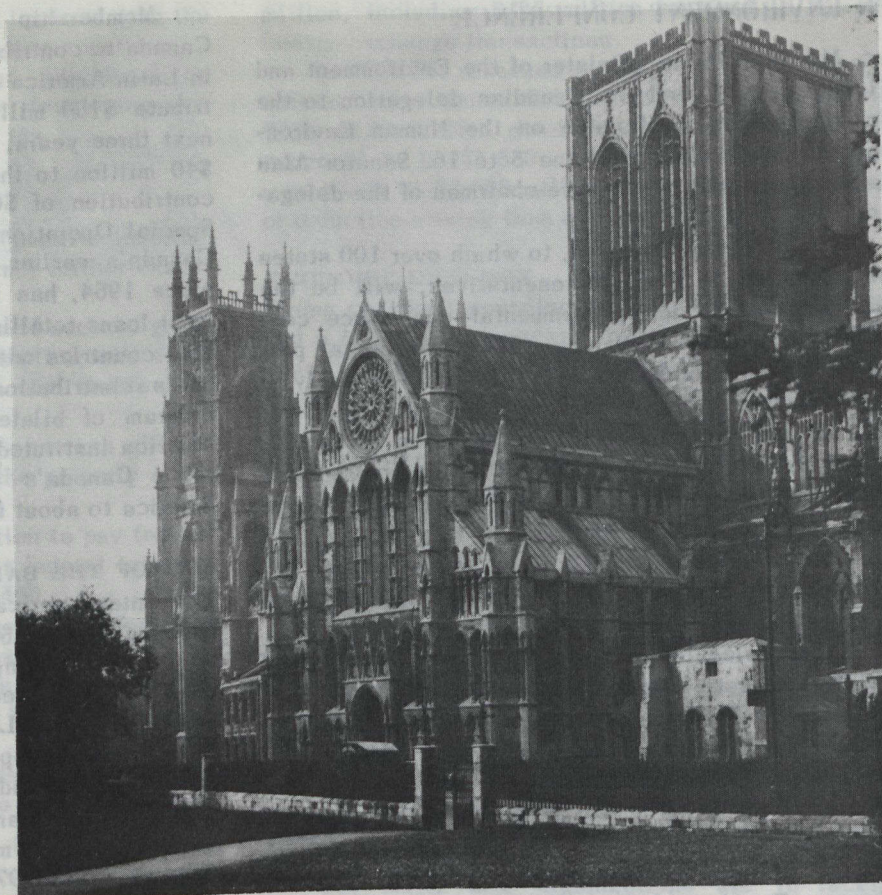


THE DUST OF AGES

York Minster, the beautiful cathedral in Yorkshire, England, built on the site of a fifth century wooden church, was recently restored with the help of the modern-day substance called fly-ash.



What does a medieval English cathedral have in common with a modern coal-burning power-station? The answer is a fine, grey powder that, according to American astronauts, bears a striking resemblance to moon dust. Its name is fly-ash.

Consultants engaged in a \$5-million restoration of York Minster found the material an ideal grout for the cathedral's crumbling stonework. It was fed under pressure to fill the tiny holes and cracks that developed in the original masonry because of settlement.

Composed mainly of silica, alumina and iron oxide, this residue from the burning of pulverized coal is one of a number of materials having pozzolanic, or binding, properties when combined with lime in the presence of moisture. Volcanic ash is very similar. The Romans knew of its cementing abilities and used it to build the Colosseum.

Fly-ash has long been a disposal problem for the power industry. In the United States alone, electric utilities will produce an estimated 29 million tons a year by 1975. Most of this will have to be dumped, and suitable sites are becoming increasingly scarce.

PROCESS PLANT PARTIAL ANSWER

Providing at least a partial solution to this dilemma in Ontario is a \$1.5-million process plant that was commissioned in March a short distance from the

2,400,000-kilowatt Ontario Hydro Lakeview generating station on the western outskirts of Metropolitan Toronto.

The plant sinters fly-ash into aggregate to replace sand and gravel in such precast products as concrete blocks, slabs and panels as well as lightweight concrete for multi-storey buildings. Another product is refined fly-ash, which can replace up to 30 per cent of the cement used in making concrete.

"It certainly represents a major breakthrough in our search for an economic use for fly-ash," says Jack Marsh, the plant superintendent.

Mr. Marsh says the plant will handle 200,000 tons of fly-ash a year, all of it from the Lakeview station. Up to now, Hydro has been paying anything from 50 cents to \$2.50 a ton to have it hauled away and dumped as landfill.

Ash arrives from the generating station in hermetically-sealed tanker trucks which receive and discharge their cargo through flexible pipes. The fly-ash process plant has three main sections: for beneficiation, sintering and the production of aggregate.

CONVERSION TO CONCRETE

In the beneficiation division, carbon and iron are removed from the fly-ash through air separation, heating and magnetic screening. Because of the type