Chapter 2

PILOT PLANT DESIGN AND CONSTRUCTION.
The Pilot Plant used to investigate the air-blowing polymerization process of bitumen is shown schematically in Fig. 1. It was equipped with an air-flowmeter, air blowing tube, a reactor vessel, a scrubber and an exhaust pipe for the disposal of waste gases.

The compressed air from a compressor equipped with a constant pressure regulator was used for the air-blowing. The air-flowmeter used was a glass tube calibrated with a standard air-flowmeter.

The air-blowing tube was made of high carbon steel pipe and was conforming to the dimensions as given in Fig. 2. There are six rows of air-holes, each row containing 20 numbers of air-holes kept at equal distance apart. It can be easily removed, cleaned and reused.

The reactor vessel was also made of high carbon steel. It was a cylindrical vessel with 12 cm diameter and 48 cm height. It is equipped with a valve on the top for the addition of raw material and chemicals. For drawing the samples at any desired time, a tap was provided at the bottom of the reactor. Electrical heating coils and a rheostat are provided to heat the
Fig. 1  PILOT PLANT USED FOR THE BITUMEN AIR-BLOWING
Fig. 2  AIR-BLOWING TUBE
material taken in the reactor to any desired
temperature and to keep it steady for any
desired duration. The temperature of the material
contained in the reactor can be read from the thermome-
ters inserted through the sockets provided at the
bottom of the reactor.

The scrubber is filled half with water. When
the noxious exhaust waste gases pass through the
scrubber a part of it get condensed and the remaining
portion is allowed to escape into the atmosphere by
means of a 30 ft. high pipe. After every run the
water in the scrubber is drained off.