



**Britain invented railways and changed the face of the world.** With the APT British Rail will achieve the fastest journey times using existing track and signalling equipment. This will be done by fundamental improvements. The most important is a better understanding of wheelset dynamics (the profile of the wheels and the way the four wheels in each bogey ride on the rails). The 'tyre' of the wheel is of special conical shape and is largely self-steering, flange contact is absent. The body structure of the APT is of

aluminium and the weight per passenger is about half that for conventional trains. Because it takes curves up to 50% faster its body is made to tilt up to nine degrees to eliminate the side force on the passengers. Design of the nose shape minimizes both drag and the rapid pressure changes which occur when fast moving trains pass one another or enter tunnels. The power required to propel a train at 250 km/h (155 mile/h) is four times that required at 160 km/h (100 mile/h). Automotive type gas turbine or 25 kV electrical power units are

being used. Even allowing for the APT's lighter weight, use of conventional friction brakes is not appropriate and a form of hydrokinetic brake will be used which dissipates energy by heating water churned within it. Electronic protection against wheel lock and special brakes for low speeds will be provided. Passenger environmental conditions of ride, noise and air-conditioning will be as good at 250 km/h on the APT as on conventional trains at 160 km/h.