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guided buses, they can operate on a fixed track when required. Trolley-buses operate on fixed routes if not fixed tracks. All the other characteristics of buses – rubber tyres, sharing roadspace with traffic and diesel power, for example – can be found amongst some kinds of railways.

For a long time the single-decked bus carrying about 45 seated passengers and up to about a dozen standing has been standard in many countries. In some of the busier cities, buses have fewer seats and more standing room to increase the carrying capacity. In Britain and in parts of the world which have been under British influence, the double-decked bus has been common, usually carrying about 70 seated and a dozen standing passengers. Away from the towns and cities, single-decked buses have always been normal due to the lower number of passengers and difficulties in manoeuvring double-decked buses on some roads.

The double-decked bus is even more efficient than the single-decked bus in terms of roadspace usage and drivers' wages per passenger. It is still the predominant form in many British towns and cities but during the 1980s the double-decked bus began to fall slightly out of favour for a number of reasons. First, acceleration is generally not as fast as for single-decked buses. Slow acceleration may be a blessing as far as passengers are concerned but with deteriorating road traffic conditions, slow acceleration has put these buses at an even greater disadvantage when trying to get into traffic queues. A further problem with double-decked buses has been that the upper deck has been particularly prone to vandalism, and at night in some towns has been unpopular with passengers for fear of assault. The number of licensed double-decked buses in Britain fell from 25 600 in 1980 to 22 800 in 1990 whilst the number of single-decked buses rose from 43 600 to 50 100.

The double-decked bus has remained largely a British phenomenon. In continental Europe, the move to increase capacity of buses on a limited number of busy city routes has been to reduce the number of seats in existing buses or to introduce longer, articulated buses. With around 150 passengers, articulated buses have a higher capacity than double-decked buses. The existence of low bridges, tram, trolleybus or other overhead cables and other obstructions has also been against introducing double-decked buses.

Not all buses are purpose-built. Many minibuses are models of vans adapted to carry passengers. In the developing world, many kinds of van and lorry have been adapted to varying degrees to carry passengers. Vehicles are smaller and older, many having been bought from Europe second-hand.

### **2.1.1 Trolleybuses**

Trolleybuses were common in Britain during the inter-war period. Worldwide there are still about 330 trolleybus networks, nearly half of



**Figure 2.1** A trolley bus in Lyon.

these in what was the USSR. In Europe, there are 15 in Switzerland, 15 in Italy and 6 in France (Figure 2.1).

During the 1980s there were some initiatives to reintroduce trolleybuses into several west European cities including Bradford, but so far with only limited success. The main reasons for reviving the idea has been that they are regarded by many as being less damaging to the street environment, emerging as a more sensitive issue in many towns and cities during the 1980s. Being electrically powered, they produce no on-street pollution. There is, of course, some pollution in generation of the electricity to power them, but this is likely to be in environmentally less sensitive areas. They are also much quieter than buses, which may be a blessing environmentally but can also be a safety hazard to pedestrians, especially the blind, cyclists and others who may detect a bus coming from behind by sound rather than sight, hence their unfortunate nickname, 'whispering death'.

It has also been claimed that they can be used on steeper slopes than diesel buses, but there are few routes where this is an issue. The reasons for their limited success so far has been the higher capital and operating costs compared with diesel buses and their inflexibility of route. The British trolleybus industry is now defunct and maintenance would be difficult. In short, the benefits they offer compared with the diesel bus are not seen as being of much significance.

### **2.1.2 Minibuses**

The term 'minibus' is often used loosely to represent any bus significantly smaller than the conventional single-decked bus carrying around 50 passengers.