

This week

continued

Road traffic computer jams up

Mick Hamer

The Department of Transport has spent over £7 million on a computer model—the Regional Highway Traffic Model—that has proved to be unusable. The latest, unpublished, report from the Advisory Committee on Trunk Road Assessment (the Leitch committee) is believed to condemn the model as useless.

The Department of Transport (DTp) justifies building new roads by forecasting the amount of traffic that will use them. But in the early 1970s, as new road building became increasingly controversial, the DTp was severely embarrassed at a series of public inquiries on new roads when objectors successfully challenged its traffic forecasts.

The road builders' answer was to centralise their traffic forecasting. Thus was the Regional Highway Traffic Model (RHTM) conceived. The DTp (advised by independent consultants) designed the RHTM to be a national traffic model that could forecast traffic flows on any hypothetical network of roads for any year in the future. This last aspect is particularly important because the DTp justifies roads on the basis of the traffic it expects them to carry 15 years after being opened.

However, on its trial run the RHTM proved an abysmal failure. To validate the model, the DTp asked it to "forecast" traffic flows on existing trunk roads. Despite engineers spending more than two years making adjustments to

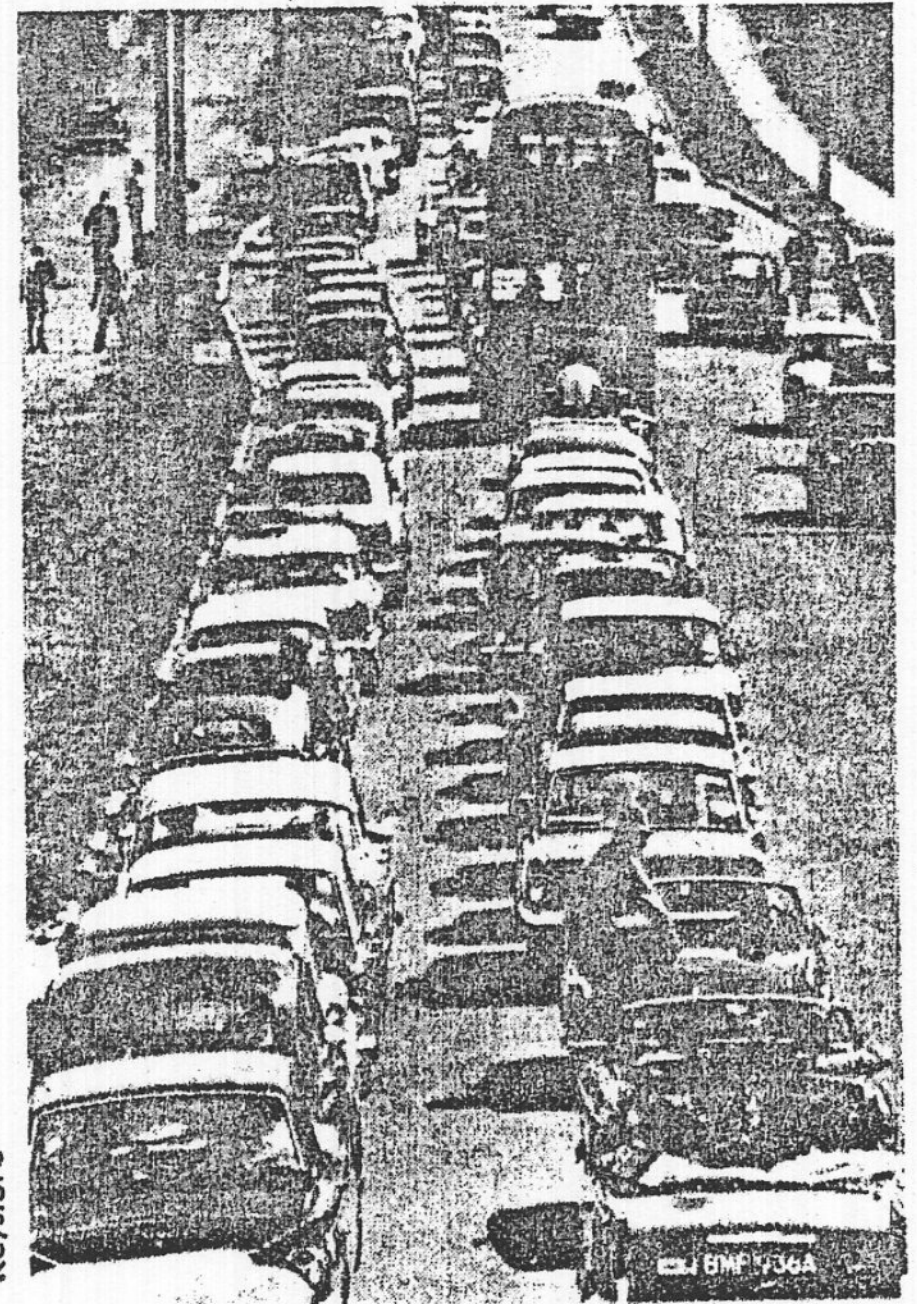
the model, its "forecasts" for existing roads can still be wrong by a factor of two. It is believed that the Leitch committee has now told Transport Minister Norman Fowler that the RHTM is unreliable.

The RHTM is based on the gravity model, which is founded on an analogy to Newton's law of gravitational attraction. In its simplest form, the gravity model assumes that the frequency of trips between two centres of population is directly proportional to the product of the two populations and inversely proportional to a function of the distance separating the two centres.

In the RHTM this relatively simple assumption is weighted down with considerable complications. The modellers divided England into some 3500 zones and took into account demographic characteristics and patterns of land-use in each zone. Subsidiary models to RHTM relate population, employment and land use to the rate of trips generated. The main growth factor in RHTM is the expected increase in car ownership. In the final stages, RHTM assigns traffic flows to a particular road network.

It is relatively easy to change the factors in simpler models, with only a few dozen zones, to produce a reasonable reflection of known traffic flows. But with 3500 zones in the RHTM, this proved impossibly complex.

Announcing the RHTM in 1975, Dr



John Gilbert, then Minister of Transport, said that the project would require "mounting a series of roadside and home interviews on a scale never previously attempted". These surveys accounted for much of the project's £7 million price tag. But the Leitch committee's report concludes that the mass of statistics these interviews generated—which is now four years out of date—is only of limited use. □

Physics centre for Third World threatened

Ziaddun Sardar

The much-acclaimed International Centre for Theoretical Physics in Trieste is facing an acute financial crisis. According to the centre's founder-director, Nobel laureate Abdus Salam, without an immediate injection of funds, it may "sink". For over a year now, Salam has been sending desperate "SOS messages" to governments and funding bodies—with-out much luck.

Cash shortages have forced the centre to reduce its staff to a part-time director, a few secretaries and a handful of consultants. And future prospects for the centre's main activity—financing visits from Third World physicists—look gloomy.

Many of the centre's financial problems are a result of world recession and inflation. In its first year, 1964, the centre played host to 150 visitors and a budget of \$325 000 was adequate. But in 1979, 1200 scientists, 600 from developing countries, visited the centre for roughly two months each. A budget of \$1.8 million is now not enough to sustain the activities that have developed at the centre over the past 15 years.

Funds for the centre come from the International Atomic Energy Agency (\$750 000 a year) and the Italian government (\$700 000 a year). UNESCO gives \$300 000 a year and the Swedish govern-

ment donates some \$60 000 a year toward the centre's running costs.

Salam is looking for another \$2 million to maintain the quality and spread of activities of the centre. Salam's main hope is for a grant from the Interim Fund for Science and Technology for Development (IFSTD), which the UN is to set up after its Conference on Science and Technology for Development last year in Vienna. The pledging conference for IFSTD will take place at the UN in New York on 28 March. Salam hopes that his SOS messages to the UN Development Programme, which will administer the new fund, will bear fruit.

The Italian government is Salam's second hope. The Italian contribution to IFSTD will probably be \$4 million. Salam hopes to persuade the Italians to give half of this *directly* to his centre to strengthen its research on energy.

Ironically, the financial problems of the Trieste centre come at a time when several other international centres of excellence are being planned on the Trieste model. Indeed, Salam himself has helped to found a number of these centres in the past few years. The International Centre for Mathematics in Udine, in northern Italy, has been operating for five years and is a direct result of his efforts. Recently, he has also been in-

involved in setting up the International Centre for Pure and Applied Mathematics in Nice and the International Centre for Physics in Mexico City, which opened on 22 February.

Salam has generated considerable interest in the idea of international centres in Latin America. Four international centres in Latin America are on the drawing board: a centre studying alternative energy sources in Brazil; one for mineral technology in Peru; one specialising in solar energy in Colombia and one for postgraduate sciences in Venezuela. Peru is also planning a centre in Cusco for Third World scientists to carry out advanced studies.

The centre for postgraduate sciences in Venezuela, which will, in effect, be an international university with students from the Third World, seems almost certain to be set up soon. Venezuela has generated considerable enthusiasm among OPEC countries for the idea and President Herrera of Venezuela, an influential voice among the oil-producing nations, was in Vienna earlier this week trying to persuade OPEC to back the centre.

"It is ironic," notes Salam, "that while the concept of international centres of excellence to promote the development of science in the Third World is spreading and many new centres are about to get off the ground, the original model may actually sink for lack of funds." □