

London fares relatively well in the health league, although the boroughs of Southwark, Shoreditch, Stepney and St Marylebone have mortality rates well above the national average. In contrast, Bournemouth seems to be the healthiest town in the UK. These variations seem to suggest that disease mortality is highest in areas of poor housing and heavy industry.

The variations in mortality from specific diseases are even more striking. The similar distribution of high mortality from lung cancer for both males and females suggests that an environmental factor is particularly important in this disease. As might be expected, the disease is more common in areas of heavy industry, the four areas with the highest incidence being Greater London, Merseyside, northeast England and Central Scotland. A different environmental factor seems to be operating in the case of diseases of the circulatory system. Although Professor Howe does not rule out the possibility of genetic factors and regional habits, his maps seem to support the theory that there is an inverse correlation between high incidence of these diseases and the hardness of the water supply. A particularly interesting finding is that the coronary mortality in Birmingham, which has soft water, is below the national average. The Birmingham water authority has neutralized the acidity of its water for several years.

Mortality from bronchitis follows the expected pattern, with the areas of highest incidence being those associated with heavy industry. London, in particular, fares worst in the central boroughs. Although the richer boroughs of London escape many of the diseases associated with poor housing and polluted air, they come off badly in mortality associated with mental stress. In Westminster, Hampstead, Chelsea and Kensington, mortality from suicide is more than twice the national average.

#### EUROPEAN NUCLEAR POWER

### ENEA takes the Pulse

THE application of nuclear power in Europe has lately been going through a period of reappraisal rather than of innovation. This is the verdict of the European Atomic Energy Agency in its report for 1969 which was published last week. Largely because of the economic situation in Europe, the processes of decision-taking in the area of nuclear power are becoming more protracted. But according to the report, these changes in attitude are not greatly affecting forecasts of the growth of nuclear power in Europe.

The European Atomic Energy Agency is, of course, the agency of the OECD which promotes the Dragon high temperature project at Winfrith, the boiling heavy water reactor project at Halden in Norway, and the Eurochemic fuel reprocessing plant at Mol, Belgium. The report notes with pleasure that recent months have seen decisions to continue with each of these projects, all of which came up for renewal recently. As well as supporting other less ambitious cooperative projects, such as the maintenance of a computer program library at Ispra in Italy and a Neutron Data Compilation Centre at Saclay (France), the agency keeps a watching brief over the fortunes of European nuclear power programmes.

Because the demand for electricity has not risen quite as quickly as expected, there has been a slacken-

ing in the ordering of new power stations, and this is particularly so in Britain and France, which have so far made the running in the growth of European nuclear power. The report points out that neither lack of confidence in the nuclear power nor concern over uranium supplies, two popular bogies, is implicated.

But the report makes the point that the economics of plants for enriched uranium, such as the British-Dutch-German centrifuge project, are extremely sensitive to the amount of enriched uranium which is to be produced, so that forecasts of demand need to be accurate. Unfortunately the predictions seem to be less certain now than they have been. With the demand for electricity not rising at the expected rate, the estimate of 100,000 MW of nuclear capacity installed in Europe in 1980 is in doubt. This estimate followed from the anticipated need for 40,000 MW of nuclear power by 1975, which with 26,400 MW already installed by half-way through last year implied the ordering of 13,600 MW during the next year or so to meet the deadline. The protagonists of the centrifuge project, who promise to produce enriched uranium competitive with the American product, will no doubt be keeping a close eye on the way the demand develops.

#### SOVIET UNION

### Lightning Communication

from our Soviet Correspondent

THE launching last month of the latest in the series of "Molniya-1" ("Lightning") communications satellites of the Soviet Union, coinciding as it does with the Washington conference on communications satellites, must inevitably draw attention to what may be classed as one of the less publicized achievements of the Russian space programme.

It may well be true to say that in no other country are communications satellites less of a luxury and more of a necessity. The sheer geographical extent of the USSR, sprawled as it is across so many time-zones, has always placed rapid communications at a premium. And since, in spite of the great development schemes of the 1950s, much of the vast area of Siberia is still an emerging rather than a developed region, the problems posed by a satellite communications system have been solved in rather a different manner than in, say, the USA. Indeed, the basic concept of Molniya-1 differs from the American Comsats, since Molniya-1 is not a geostationary satellite, and more than one must be employed if round-the-clock coverage is to be achieved.

Molniya-1 is a heavy satellite, with a reported transmitter power of 40 W. The accepted proportion for communications satellites is that each watt of radiated power corresponds to 2 kilograms of transmitter weight, and that the transmitter weight is about a quarter of the total weight. Thus the Molniya-1 satellites must have a weight of the order of 320 kg.

With satellites of this power, it is possible to use comparatively small ground stations. Under conditions in the Soviet Union, this is a considerable advantage, since a wide network of ground receiving centres can be erected relatively quickly and at comparatively low cost—an important factor when dealing with the rapidly developing areas of Siberia.