REPRODUCTION

Old Wives' Tale Half True

ONE old wives' tale for which there is some backing is that women remain infertile for some weeks after giving birth—and the precise length of this period depends on whether or not a mother is lactating. In the current issue of *Lancet*, Dr T. J. Cronin, a general practitioner from Birmingham, reports that when breast-feeding is in progress and menstruation has not returned, ovulation before the end of the tenth week is unlikely (*Lancet*, ii, 422; 1968). This information could be important, because it indicates that methods of avoiding conception are unnecessary before this date. This in turn means that the use of certain methods of contraception which may inhibit lactation could be postponed to enable lactation to become well established—an important consideration in countries where the infant depends on breast milk for its intake of protein.

Ninety-three women who were lactating and eighty-one who were not collaborated in the study. The return of ovulation was detected by daily measurement of rectal temperature, and the dates of menstruation as well as the duration of breast-feeding were recorded. Dr Cronin estimated the mean time to first ovulation in the non-lactators to be 73·5 days, and a fertile ovulation preceded the first menstruation in twenty-one cases. In other words, women who do not breast-feed their infants have a one-in-twenty chance of being fertile before the end of the 6 week post partum period which is often believed to be non-fertile.

Lactation was found to delay the onset of ovulation from 70·7 days in twenty-eight cases to 192·5 days in two cases—more prolonged periods of lactation being associated with increasing delay in the return of ovulation. One surprising finding was that women who attempted breast-feeding but did not continue beyond 28 days resumed menstruation significantly earlier (43·5 days) than those who did not breast-feed at all (58·9 days); the short period of lactation had no effect, however, on the return of ovulation.

TELECOMMUNICATIONS

Satellites for Satellites

ANY western public relations agency could have told the Soviet Union that invading Czechoslovakia was no way to recruit members for its proposed satellite network. The invitation to all and sundry, eastern European countries in particular, to join in an Intersputnik system, a rival to the American-dominated Intelsat (International Telecommunications Satellite Consortium), was presented in Vienna by the head of space communications for the Soviet post office at the conference on the Peaceful Uses of Outer Space.

Intersputnik came as no surprise. Last year the representatives of nine eastern European countries met in Moscow to discuss proposals for a network of their own based on the Molniya satellite which the Russians now use. (The Molniya satellites travel in a highly elliptical orbit and thus differ from the Intelsat synchronous satellites.) But this year, with Mongolia and Cuba signed up, the Russians were talking about a synchronous satellite network, even though they have no experience with them.

There is one glaring flaw in the Intelsat network from which the Russians might have profited. The Intelsat consortium has sixty-one members, but their power within it is based on their investment in the system. The United States, represented by Comsat, the Communications Satellite Corporation, has 54 per cent of the influence; Britain, represented by the GPO, is a weak second, with 8 per cent. Under this formula, the Arab countries together share a single vote. Latin America, where satellites are soon going to bring radio and telephones as well as television to regions where there is no telecommunications at all, has a tiny share of the vote, and Russia itself, were it to join—as President Johnson has been wistfully hoping—would have less than a fraction of a vote. By contrast, the proposed Intersputnik network would offer membership on a one-country one-vote basis. This might well have attracted developing countries, not to mention Jugoslavia, which has been toying with accepting membership in Intelsat for more than a year. But all that was before the Russians made smuggled film and jammed radio broadcasts the best way of communicating with Czechoslovakia.

If there are any small consolations arising from last week's events, one may be that the Intelsat network may now seriously begin to revise its formula for allocating votes to its members. The consortium is in the throes of writing a permanent charter for itself and is to have finished the job (under an interim agreement signed in 1964) before January. It has already been rumoured that the American domination was going to be relaxed and Latin America allowed greater authority, and perhaps even an independent regional system within Intelsat. But now that the Russians have simultaneously proposed a more democratic satellite system and discouraged outsiders from joining it, Intelsat has a new incentive to make its structure more attractive to the poorer countries. The details of the proposed permanent Intelsat agreement, when they are revealed as they probably will be in the next few months, will show whether or not this opportunity has been taken.

FUEL

Nuclear North East

THE fact that the Ministry of Power in Britain is now run by a man who has earned his living down the pits does not yet seem to have shaken its faith in a cheap fuel policy. Mr Roy Mason last week confounded his critics by announcing approval for the building of a nuclear power station at Seaton Carew, very near to the Durham coalfield. Mr Mason has clearly been convinced by the arguments of the Central Electricity Generating Board, or perhaps by its threats to abandon the Seaton Carew site unless it was allowed to build a nuclear station there. The CEGB says that the station, rated at 1,250 MW, will consist of two advanced gas cooled reactors, each providing steam for a 660 MW generating set. Tenders have already been in for several months, and it is hoped to reach a decision by October of this year to enable the power station to come into operation in the winter of 1973–74. As things stand, the station will be the third AGR in England, following Dungeness B and Hinkley Point B. (The South of Scotland board is building another on its own account at Hunterston).

The construction cost of the power station will be £91 million; taking into account the initial fuel charges and the interest charges during construction, total costs will be £125 million, according to the Ministry of Power. A coal fired station of the same size would have cost £76 million, or £89 million if interest charges during construction had been included. (On the face of it this seems a very high figure for a coal fired station, but the National Coal Board has not queried the arithmetic, so it is probably right.) The generating cost for the AGR will be 0·52 pence per KWh, while that for a coal fired station would have been 0·70 pence. Of the nuclear generating cost, 0·36 pence is accounted for by capital charges, while in the case of coal only 0·23 pence would have been accounted for in this way. Operating costs for the coal station would therefore have been nearly four times as great, at 0·47 pence against 0·16 pence.

Lord Robens, chairman of the National Coal Board, who has put up a determined fight to make the station coal fired, accepted the decision stoically. There was no point, he concluded, in pursuing guerilla warfare. Even the name Seaton Carew is likely soon to be forgotten, for the CEGB has started to call the station Hartlepool—not, it seems, in the hope of pulling the wool over the eyes of the Durham miners, but simply because there has been a change in the boundaries of the local authority area in which the station will be situated.

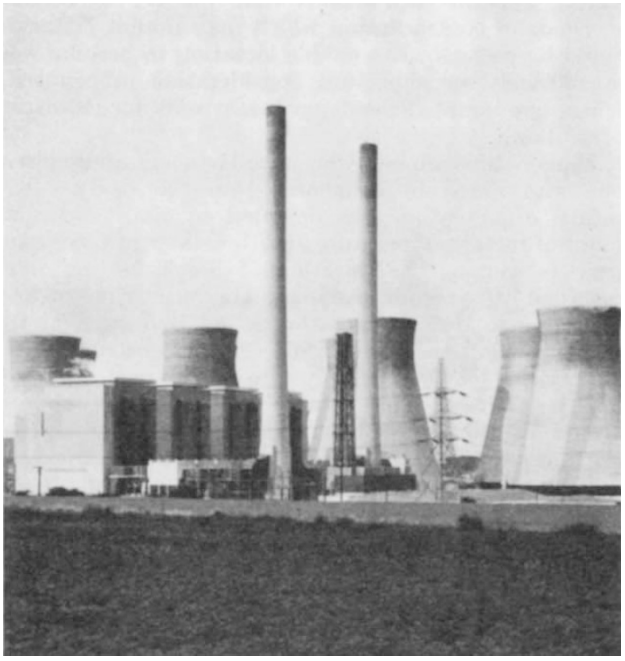
It seems likely that the contract for the station will be of the conventional turnkey type. This means that one of the existing consortia will be responsible for building everything in the station from fuel elements to door knobs. By deciding that the station will be an AGR, however, the CEGB may be missing an opportunity of taking advantage of the high temperature technology developed in the Dragon reactor at Winfrith. It also implicitly assumes that an American boiling water reactor built under licence could not compete with the AGR. (A recent study by the Bechtel Corporation in the United States makes this assumption look less shaky than it has in the past. The Bechtel study suggests that the AGR could be competitive in the United States; it is also probably fair to say that the pressure vessel problems, still not entirely solved in the US, favour the AGR.)

POWER STATIONS

Where the Wind Blew

WHETHER people like it or not, Ferrybridge C Power station will always be remembered as the place where the cooling towers fell down. That happened in November 1965, while the station was being built. The towers, rebuilt and strengthened, have so far shown no signs of a repeat performance, but the Central Electricity Generating Board has movie cameras pointing at them just in case. When the wind blows, somebody rushes out and mans the cameras in the hope of a film which might rival the famous one of the Tacoma Narrows Bridge falling down.

In spite of the disaster, Ferrybridge C has turned out to be remarkably cheap. It is also now the biggest power station in operation in Britain, capable of generating 2,000 MW(e) when all four of its turbines are at full stretch. The total construction costs of the station will be very near £80 million, which is equivalent to £40 per kilowatt installed. Most probably it will never again be possible to build another thermal station as cheaply and the 2,000 MW stations which are to follow will all cost more, thanks to increases in the costs of construction. So far, the most that Ferrybridge C has generated at any one moment is 1,296 MW (which is said to be the highest ever achieved by a British power station), but everybody hopes that it will achieve maximum rated power when it is opened next week. Each of the four 500 MW sets has been fully commissioned, but there has not so far been a chance to operate them all at full power at the same time.



Ferrybridge C power station.

The station is the first to use 500 MW generating sets, made by C. A. Parsons at Newcastle upon Tyne. This was a brave decision, taken before there was any experience with sets greater than 200 MW. Mr Leslie Giles, superintendent of the station, points out that 100 MW sets were looked on as monsters only 10 years ago, but courage seems to have been amply justified. A power station this size consumes about 5 per cent of its output simply in operating, so that if the whole electricity network goes completely flat (as in the New York electricity failure of 1966) it is impossible to start up the station again. To guard against this, Ferrybridge has four Bristol Siddeley aero engines, each capable of generating 17·5 MW. Each can be started up in 2 minutes, and can be used either to start the main power station or to supplement its output for very short periods of high demand.

Coal can be brought to the station at the rate of 32,000 tons a day—8,000 tons by barge and the rest by rail. The National Coal Board is charging a pithead price of around 4 pence per therm for this coal, which is then used to generate electricity for 0·55 pence per KWh. As the table shows, this generating cost compares well with estimates for later 2,000 MW stations, and with all the nuclear stations before