

forward projections now published consist not merely of total population as a function of time but of the age distributions corresponding to each set of assumptions, and it is no surprise that the least quickly growing or even static populations are characterized by smaller proportions of younger people.

Although the new calculations are no doubt a valuable correction to the estimates published three years ago, outsiders may well ask whether enough is yet known about the causes of the decline in fertility in the sixties for any forward projections to be meaningful at this stage. In the sixties, the crude birth rate (births per year per 1000 population) fell from 23.9 in 1960 to 17.6 in 1968, and there is as yet no sign that it will be halted. Even the most pessimistic of the forward projections, however, implies that there will be an increase of the crude birth rate in the seventies and early eighties. On present form, there is very little sign of such a tendency. At the same time, however, it is only natural to ask whether the recent rapid decline of the birth rate represents a reduction of the fertility of women or, alternatively, a drastic change of child-bearing pattern such as might be constituted, for example, by a postponement of child-bearing to a later age. Even the results of the 1970 census, now being analysed, are unlikely to throw much light on these and other possibilities; from which it follows that the embattled Census Bureau is likely to find itself putting out yet another correction of its forward estimates before many years have gone.

METEOROLOGY

Explosions make it Rain

EARLIER this year the United States celebrated the hundredth anniversary of the American Weather Service, set up largely as a result of prodding by Professor Increase A. Lapham of Milwaukee after storms on the Great Lakes in 1868 and 1869, during which more than five hundred seafarers lost their lives. Now, in 1970, the American Weather Service must be the best equipped in the world. For an outlay of about five hundred dollars anyone can build the equipment to pick up photographs from the automatic transmission cameras on American meteorological satellites. Forty-five national weather services are known to be taking these pictures. Satellites are being launched into geostationary orbits so that, fixed at one point above the equator, they can follow storms as they develop. Cloud cover can now be measured over the night-time half of the Earth using infrared sensors. As much as anything, the satellites mean that data can now be recorded over regions that are otherwise virtually inaccessible except at great expense—most of the oceanic areas of the southern hemisphere, for example. Because of the satellites the US Navy no longer has to station weather ships along the air routes from New Zealand to the bases in Antarctica.

A celebratory history of the Weather Bureau has now been published (*A Century of Weather Service*, by Patrick Hughes; Gordon and Breach, 1970). As much as anything the book is fascinating for its illustrations, photographs of the pioneers of meteorology in the United States and their equipment. But the history of meteorology has not been entirely a success. Efforts to modify the climate artificially have had equivocal success. The emphasis has been on

inducing rain, whereas in the Soviet Union, the other major centre of this kind of experiment, comparable effort seems to have been spent on making the weather as pleasant as possible. In the United States there have been a variety of experiments since 1945, but as long ago as 1890 Congress appropriated money to General R. G. Dyrenforth to find out whether explosions cause rain. A series of unsuccessful tests in 1891 and 1892 using batteries of cannons, and bombs with time-fuses, carried by balloons and kites, culminated in the firing of balloon bombs at forty-five minute intervals from noon until 3 a.m. the following day, after which it indeed began to rain on the sleepless inhabitants of San Antonio.

SPACE BUSINESS

Disputes about Satellites

THE National Aeronautics and Space Administration seems to be going through a bad patch in its attempts to award contracts for the development of specific Earth satellites. Earlier this year, the award of a contract to the General Electric Company for the development of a Technological Satellite was challenged and eventually cancelled (see *Nature*, **226**, 402: 1970) on the grounds that the company had an unfair advantage over its competitor, the Fairchild-Hiller Corporation. Now it appears that a similar complaint against the award of a contract to General Electric for the development of an Earth Resources Satellite has again been made by the unsuccessful bidder, TRW Inc.

The dispute on this occasion seems to centre on the degree to which the two companies were given access to a preliminary study of the design of the system carried out by the Bendix Corporation. It seems to be agreed that both the bidders in the competition were sent copies of this report only a few days before their proposals were due at NASA, but that the General Electric Company worked with the Bendix Corporation on the preparation of its own proposals. On this occasion, it appears that NASA is satisfied that there is no need of a formal reappraisal of the award of the contract.

Foreign Visitors

THERE is some consternation at Stanford University about the decision of the Czechoslovak Academy of Science that Dr Jiri Masek, head of the department of inorganic chemistry at the Polarography Institute at Prague, should not be allowed to take up a National Science Fellowship at Stanford. According to a statement by the university last week, Dr Masek has been informed that the academy considers that the numbers of Czech scientists working abroad now exceeds "a reasonable limit", and that until some of those working abroad return home, others will not be allowed to leave. Dr Masek has been told, according to Stanford University, that he should keep on applying for permission to work at Stanford. Professor Henry Taube at Stanford, with whom Dr Masek would have worked, says that he is prepared to wait for him.