

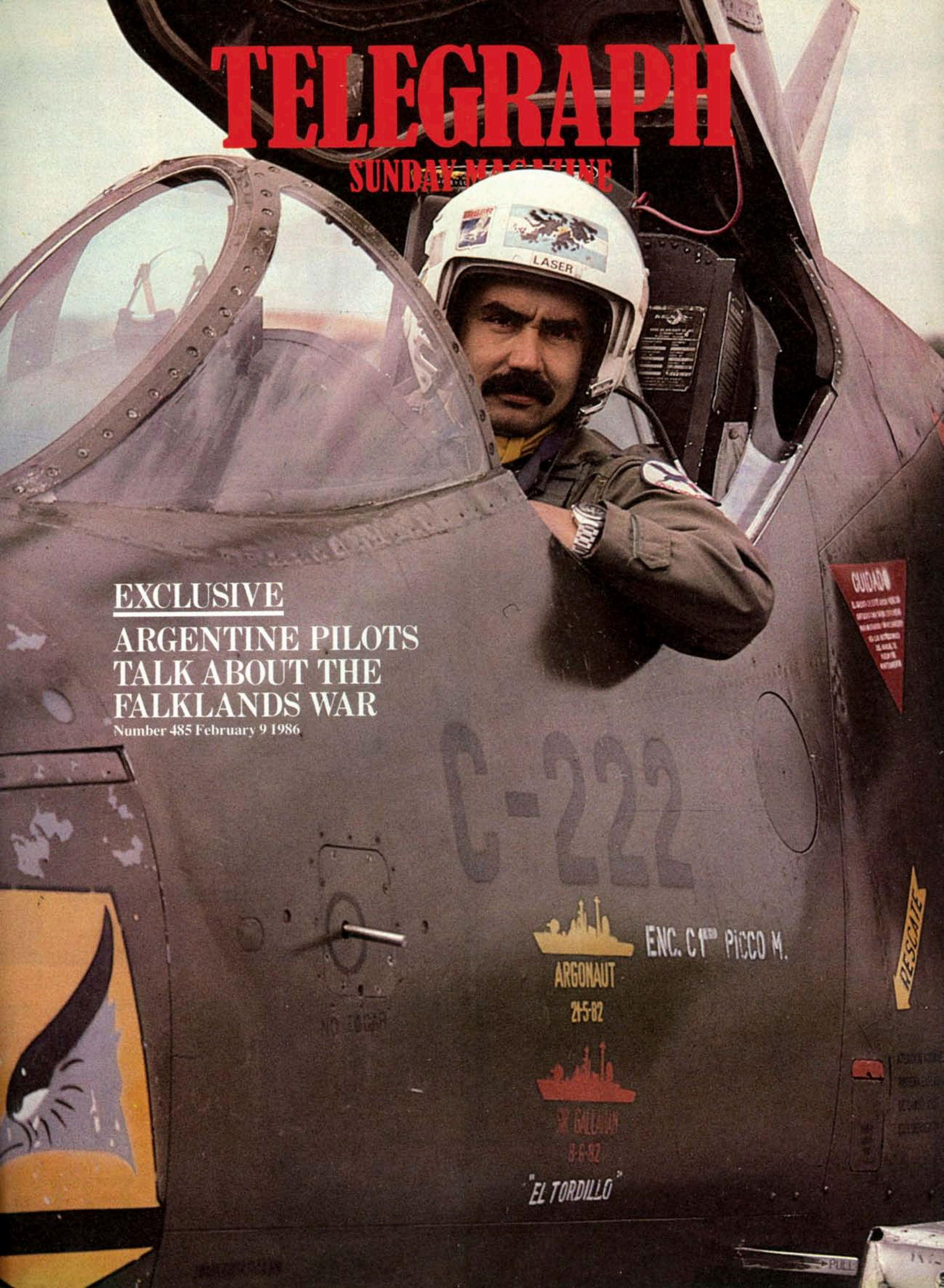
TELEGRAPH

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ARGENTINE PILOTS TALK ABOUT THE FALKLANDS WAR

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FINGER ON THE SPACE PULSE

Spot-on "fixes" for aircraft and ships, and messages through the heavens for anyone who wishes. Suddenly such ideas are no longer the esoteric province of the few. By Robert Temple

Next Friday the French rocket Ariane will, all being well, streak up into the sky from Guiana in South America carrying Geostar, a new kind of communications satellite. In the next few years this and other similar satellites will help create a new and relatively inexpensive global network. Barely a single aspect of travel or communications will remain untouched; and eventually Geostar systems could replace such things as telegrams, ensure greater safety at sea and, in the air, create more efficient transport systems.

Remarkably, this important new development is the brainchild of a single man, Dr Gerard O'Neill, Professor of Physics at Princeton University in America, and its development is entirely the result of private enterprise. A 58-year-old from Brooklyn, O'Neill first came to prominence in the fifties when he invented what was called the storage ring technique for colliding particle beams and, in so doing, solved one of the basic problems blocking the advance of nuclear physics.

Then, in 1978, after a successful career as a nuclear physicist and a space enthusiast, O'Neill heard that a Boeing 727 had collided with a

Safety-conscious Gerard O'Neill and brainchild satellite Geostar

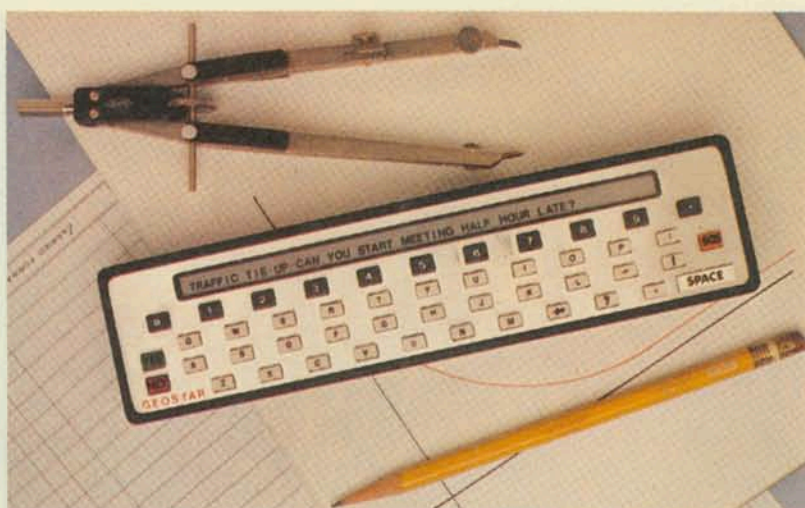


Cessna light aircraft over San Diego, sending the passenger jet into a horrifying and fatal plunge to earth. "That was the moment when I sat down and said, 'I'm going to invent a system that will make it impossible for that kind of accident ever to happen again'", he recalls.

In just four years Geostar has been designed, built and successfully tested twice in simulation – first from the mountain tops and then aeroplanes. The system has three elements: a trio of satellite relays in geostationary orbit over the United States (O'Neill says that three additional satellites would be enough to cover the entire globe apart from the poles); a ground station linked to a computer centre; and a transceiver – a small pencil-battery powered unit with a conventional typewriter keyboard attached.

Essentially this is simply a high technology version of the triangulation principle. An answer pulse from the transceiver will be transmitted to the three satellites and relayed on to the ground station's computer at the Geostar Corporation's headquarters in Princeton so it can triangulate the location of the user.

When tested, its position-finding capabilities were found to be so astonishing that it could pinpoint someone's position in three dimensions to within one metre. Another use of the system is its ability to send messages via a two-way satellite relay. As



The £700 transceiver, which will allow world-wide communications

soon as the transceiver signals an incoming message the user will be able, simply by depressing a button on his transceiver, to read it on a liquid crystal display unit.

After the success of the trials it was not hard for O'Neill to raise the £8.3m. needed to launch the first satellite and set up the ground station, by placing large blocks of shares with major investors. The total cost will be less than £42m.

"We're launching the satellites just as soon as they can be constructed", says O'Neill who is the Corporation's President. The first satellite will work in conjunction with an existing positioning system,

the Loran-C, until November when the second satellite should be in place. But these first two will only be able to monitor position; a third, two-way, satellite relay is planned for the end of 1987 and only then can the message service begin.

The first application of Geostar will be in monitoring fleets of tankers at sea and trucks and trains on land. Not only position but speed and direction of movement can be monitored continuously and accurately (existing "locator" systems, such as those used by transoceanic yachtsmen, provide a "fix" only once an hour).

The world rail franchise for Geostar's services has been bought by an American company, Guilford Transportation, which operates 250 freight trains daily over the eastern side of the American continent. "We will eventually be spending millions of dollars on Geostar", says Frank Fotta, Guilford's President. "It is a superb management tool which will greatly increase our efficiency". Once the full Geostar system is in operation, constant two-way communication between trains and headquarters will mean drivers can be given continuous instructions during their journeys.

It is also claimed that the position-finding capabilities of Geostar will substantially reduce the risk of mid-air collisions and sea and rail accidents, as signals from the satellite

system will be able automatically to activate warning signals.

Perhaps the most interesting service for the public will be the facility for instant two-way written communication between any two subscribers, even if one is in the mountains and the other in some equally remote place. Transceivers will instantly deliver four-line messages through the Geostar satellites overhead. Sony is mass-producing transceivers at a cost of about £700 each but this should eventually drop in price to about £300.

It is estimated that when all the satellites are in position late in 1987 the system will be able to carry 50 million messages an hour. O'Neill foresees 100 million subscribers world-wide. American subscribers will be expected to pay about £14 a month for the service, plus the cost of messages sent, the latter being cheaper than most telephone calls. The speed – a fraction of a second – with which messages can be transmitted could mean the eventual demise of the telegram and telex.

It is hoped that Geostar's services will be available in Europe in two to five years' time. However, much will depend on European investors buying the relevant franchises and funding the construction and launching of the two extra satellites needed for the service to be extended. According to O'Neill "considerable interest" has already been expressed in Europe. It would also be necessary for each franchisee to obtain radio frequencies for Geostar operations, as has already been done in the U.S.

Professor O'Neill says he will remain in charge of Geostar in America, as well as carrying on a separate line of research into the possible civilian uses for space. He has already announced that most of the profits he receives from the Geostar project will go towards his ambitious schemes for developing and building manned space colonies. Last year President Reagan appointed him to the new National Commission on Space, and O'Neill's vision of the future is of man inhabiting and using space as naturally as he uses the oceans. ①

If you filled every day with eating and drinking, you could still take in only a little of what Guernsey has to offer... Traditional or international cuisine... of high standard and no VAT prices. Just some of the special qualities you get when you...

HOLIDAY GUERNSEY

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A LITTLE LEARNING?

1. What towns were models for Mrs Gaskell in (a) *Cranford* (b) *Sylvia's Lovers*?
2. What is the word for resembling a remote ancestor rather than a parent?
3. Meat killed in accordance with (a) Jewish (b) Muslim law is called what?
4. What kind of vehicle is a ski-bob?
5. In card games, *misère* is an undertaking to do what?
6. How many children had the Quiverfuls?

Edros Bailly

ANSWERS

- 14 (Trollope's *Barchester Towers*).
1. (a) Knutsford (b) Whitby, as Monkshaven. 2. Atavism. 3. (a) Kosher (b) Halal. 4. A low bicycle on small skis instead of wheels. 5. Take no trucks. 6.