**Journal Title:** Telecommunication Journal

**Journal Issue:** Vol. 45, no. 8 (1978)

**Article Title:** World Telecommunication Day 1978: Radiocommunications

**Page number(s):** pp. 430- 431

*Morning information session in the ITU conference room*

**Practical information on the preparation of TELECOM 79**

The afternoon was devoted to discussions with the representatives of the Orgexpo foundation responsible for the practical arrangements for TELECOM 79, to a visit to the exhibition halls and to an examination of the tentative plan for the ground floor layout. At this stage, the whole of the Palais des expositions, i.e. 53 000 m² (including ground and first floors) is already almost entirely booked. The provisional ground floor plan will enable the exhibitors with large stands (between 500 and 7000 m²) to begin making their layout arrangements.

Finally, the representatives of Orgexpo submitted the model of the new Geneva Palais des expositions, which will be larger than the present one and will be finished in 1981. Located near the airport, it will have easy access and will already have been " run in " by the time it houses TELECOM 83.

---

# World Telecommunication Day 1978:

## "Radiocommunications"...

### ... Conference held in the United States

On 17 May this year the UNESCO Association of the United States of America and the National Aeronautics and Space Administration (NASA) co-sponsored the second World Telecommunication Day Conference held in the United States.

The Conference was held at the NASA Ames Research Center, Mountain View, California, with the following program:

- Radiocommunication: child of invention and collaboration (Dr. Gerd Wallenstein, Author and Consultant)
- Use of satellites for expanding continuing education for engineers (Mr. Kenneth Down, Assistant Dean and Director for Stanford Instruction Television Network)
- Curriculum sharing between Stanford and Carleton, via satellite (Mr. Larry B. Hofman, Research Scientist, Technology Applications Branch, NASA-Ames)
- Selected video tapes of CTS (communications technology satellite) experiments (Mr. Bradford P. Gibbs, Principal Investigator for Ames CTS experiments)
- Voices (Communications Satellite Corporation motion picture)
- Telecommunications (Mr. Robert E. Bishop, Sales Staff Manager, AT&T Long Lines, San Francisco)
- UNESCO perspective (Mrs. Dorothy Hackbarth, President, UNESCO Association-United States)
- Space settlements (Dr. Richard D. Johnson, Chief, Biosystems Division, NASA-Ames)

In his keynote address Dr. Wallenstein spoke of radiocommunication as the child of invention and collaboration, born of the complementarity of these two potentially divergent forces. As an example, he cited Guglielmo Marconi, who made great contributions to the art of transmitting radio waves, but whose business acumen and agressiveness led him to found companies to exploit his invention. Marconi's companies in England and Italy attempted to monopolize the field. Naturally other countries balked. Pressure developed on the Marconi interests to collaborate with other nations. Some competitive systems made their appearance threatening Marconi's monopoly; his companies retaliated by refusing to accept messages that originated from ships outside his monopoly. By persuasion and compromise, the first formal international agreement in radiotelegraphy was worked out at the Berlin Radiotelegraph Conference, in 1906.

A counter-example was Major Edwin Armstrong, an American radio prodigy before the age of 20. " Radio technology is indebted to him for several fundamental inventions, among them the superheterodyne receiver (in 1918!) that made much of broadcast radio's rapid spread possible. In 1935 he demonstrated frequency modulation,... the only radio broadcasting methodology that makes noise-free, high-fidelity reception possible. Every music lover today has an FM receiver," Dr. Wallenstein continued, " yet Major Armstrong was not able to enjoy the fruits of his invention and initiative. The networks opposed the introduction of FM broadcasting stubbornly, and in response the Federal Communications Commission (FCC) set back its public development by many years. The FCC did this by reassigning suitable frequencies to land mobile and television channels, and by restricting FM transmission power so as to limit a station's range to a small local service area. Armstrong exhausted his physical and financial strength in battling these odds; he died a broken man whose name is all but forgotten ".

The opposite examples of Marconi and Armstrong give us an opportunity to appreciate the interaction of invention and collaboration. Clearly, Marconi benefited from collaboration. Equally clearly, Armstrong failed to get the official collaboration that mattered.

The work of the International Telecommunication Union illustrates the need for mating invention with collaboration, Dr. Wallenstein said, though in this case invention should be considered in the broad sense of innovation and technological advance.

Dr. Wallenstein gave three different examples of collaboration. In the first case he traced the progressive reallocation of a small part of the frequency spectrum, from 1947 to the present, in order to accommodate an increasing diversity of services. The second case illustrated limitations to collaboration when the available allocation is inadequate to satisfy all national assignment demands without excessive mutual interference. The third case was that of the Broadcasting-Satellite Agreement of 1977, which he described as " a valiant effort at foresight in hopes to avoid a repetition of the situation described in case 2 ".

#### Case 1

" ... Forty-five years ago at the Madrid Conference of 1932," said Dr. Wallenstein, " there were nine (radio) services; now there are about 40. Almost half the expansion is due to the advent of satellite communications. For example, earlier aeronautical mobile and maritime mobile services now have competition from aeronautical mobile-satellite and maritime mobile-satellite services, respectively."

As an example he traced the frequency allocations between 1300 and 1700 MHz from Atlantic City (1947) to the present day. In summary, a band of 400 MHz width, allocated in 1947 to four services over two sub-divisions within this band, is allocated 30 years later to 11 services that are now distributed over 17 sub-divisions. Moreover, in 11 of these 17 sub-bands, two or more services must share the same frequencies. In practice, this sharing requires a continuous international co-ordination of national radio station frequency assignments.

#### Case 2

ITU conferences through the years have resulted in equitable divisions of the radio spectrum in many instances, but competing uses continue in others. Among the positive results is a world-wide frequency allocation for radioastronomy which no country disputes.

Radio broadcasting frequencies, however, remain overcrowded and competitively used, particularly in Europe where numerous countries, language and cultural barriers, and a territory smaller than the United States make agreements difficult.

" ... Prevention of mutual interference of radio broadcasting stations—as received anywhere in Europe—is a political, cultural, and technical nightmare," said Dr. Wallenstein. "After more than 50 years of radio broadcasting in Europe, it is safe to say that there is no really satisfactory solution for the problem. The best one can hope for is a spirit of collaboration of such extraordinary magnitude that, in every European country, at least a few key stations may be received by local area residents with a tolerable minimum of interference."

#### Case 3

Evoking the Broadcasting-Satellite Plan of 1977, Dr. Wallenstein said that this represented an attempt to adopt a promising new technology for definitive future application, before any uncoordinated investments had been made. The Broadcasting-Satellite Conference of early 1977 created a detailed plan for the future development of the broadcasting-satellite service in all parts of the world except the Americas. A definitive plan for this region was deferred to a future conference to be held in 1983.

" Broadcasting-satellite service is seen as an absolutely necessary tool for national education and for cultural cohesion by some developing countries such as India. By virtue of satellite illumination of large areas, thousands of villages and millions of homes may be reached from one radiating source.

" Technology and its economic realization are not quite ready yet for widespread use of this service. The North American argument favours deferral of rigid, national assignments until the world would be closer to implementation of actual installations. But the rest of the world takes an almost opposite view. Many other countries want to have their place in the satellite broadcasting spectrum assured, so that they may choose to occupy it when they are ready. Particularly the technologically weaker and the smaller countries want to have what they consider a fair share, even though they may not make use of it for a whole generation."

#### Conclusion

" We have ranged wide over the field of radiocommunication, demonstrating how innovation and collaboration must interact so as to make it work," said Dr. Wallenstein. " The ITU has the task of keeping this marriage and its progeny responsive to the needs of all humankind. Let radiocommunication and the ITU be forever youthful in performance of their worthy tasks! ".

## Ideas and Achievements

# " OTS-2 " European communication satellite launched

The European Space Agency (ESA) communication satellite, *OTS-2*, was launched on 11 May 1978 by an American *Delta 3914* vehicle from the Eastern Test Range, Cape Canaveral, Florida. This satellite replaces *OTS-1* which was destroyed when its Delta 3914 launcher exploded 54 seconds after lift-off on the night of 13-14 September 1977.

The OTS-2 launch originally planned for 4 May was postponed three times by the United States National Aeronautics and Space Administration (NASA), first because of anomalies registered in the electrical ground support equipment at the launch site, then because part of the required redundancy in the launcher's first stage engine control circuitry was not working, and finally with the discovery, during check out of the Delta 3914 launcher, of a fault in its second stage inertial measuring unit.

OTS-2 (orbital test satellite) is identical to its predecessor. Based on needs defined in consultation with European PTT and broadcasting authorities, it has been designed for a minimum lifetime of three years in preparation for an operational European communication satellite *(ECS)* system. Development of the first two operational satellites was approved early in March this year and *ECS-1* is scheduled for launch at the end of 1981. For this European regional system, the launch of a total of four operational satellites into geostationary orbit by Europe's *Ariane* launcher is envisaged between 1981 and 1990.

OTS-2 is intended to:

*1)* demonstrate the performance and reliability in orbit of all on-board equipment;

*2)* carry out experiments on the transmission of radio waves through the atmosphere, frequency re-use, etc.;

*3)* provide an adequate pre-operational European traffic capacity.