

The principal event for both the broadcasting organizations and the viewing public in 1976 was undoubtedly the coverage of the Olympic Games. Although the necessary rights were obtained only at the last minute, the Operations Group formed from the staffs of members of the European Broadcasting Union ensured that comprehensive coverage was available of both the Winter Games, held at Innsbruck (Austria) from 4 February 1976 to 15 February 1976 and those at Montreal, Canada from 17 July to 1 August, 1977. On the latter occasion, for the first time, the Joint Operations Group also included personnel from the broadcasting organizations in Eastern Europe that are members of the International Radio and Television Organisation (OIRT). As well as the facilities provided by the Organisation de Radio-Télévision Olympique, a brand-new transportable central control room which had been designed and built especially for such major occasions was employed for the first time.

Two transatlantic satellite circuits were leased for the duration of the Games; one was intended for multilateral transmissions, and fed by a transportable Earth-station located at Côte des Neiges, Montreal; the other, intended for individual request transmissions, was routed through the permanent Earth station at Mill Village, to which the signals were sent either by terrestrial microwave circuits or via the Canadian ANIK satellite. Reception in Europe was shared equally between six Earth stations, one of which (at Iranjica in Yugoslavia) had only recently been equipped for television operations. In all, more than 133 hours of multilateral transmissions and 333 request transmissions were produced and supplied to Europe on that occasion.

So far as development in other fields is concerned, relatively little progress is revealed in the statistics of the television networks in 25 countries within the European Broadcasting Area that can now participate in Eurovision program exchanges. Only one broadcasting organization has introduced a new program service: the RJ1 service in Malta which provides Italian-language programs. However, in both Ireland and Belgium, the installation of facilities enabling additional program services to be introduced in association with the discontinuation of obsolete transmission systems is well advanced. Although a large number of new low-power rebroadcast transmitters have been taken into service in order to complete the national coverage of existing networks, almost all the recent high-power transmitters have been installed as part of the arrangements for eliminating obsolescent monochrome transmission standards, by providing duplicate coverage using a modern

625-line color system, notably in France and the United Kingdom.

Color broadcasting is now well established, almost ten years after it was first introduced, with only Greece, Malta, Portugal and Turkey remaining exclusively monochrome. It should be noted that in several countries more than half the audience is now equipped to view in color. It should also be noted that this data is generally taken from receiver licence returns, so that no account is taken of the growing number of homes in which more than one receiver is used.

As well as the national program services listed in Table I, it should be noted that there are several television services broadcast in Western Europe for armed forces personnel and their local dependents, such as in the Federal Republic of Germany (where separate Belgian, British and American services are available locally) and in Greece (where the YENED network has a substantial audience among the general public). The American Forces Radio and Television Service has introduced color (using North American standards) during the past year.

Another development not apparent in the Tables is the introduction of domestic data broadcasting in association with television, generally of the type known as Teletext; that is, the transmission, in digital form, of alphanumeric characters and simple graphical elements for display on the screen of domestic television receivers equipped with a suitable decoder. Services known as CEEFAX and ORACLE, conforming to the same technical standards, are provided by the BBC and IBA respectively in the United Kingdom, while work on developing a more sophisticated system known as ANTOPE proceeds in France. This new medium of communication is being used to provide a service of regularly updated news bulletins and sports results, as well as a source of topical reference material in the fields of finance, household management, entertainment, employment opportunities, weather, transport facilities, education, etc. It also has a valuable potential application as a means of providing optional subtitles, especially for the benefit of viewers suffering from hearing impairment; it is only one of several rapidly-developing electronic systems that employ the domestic television receiver as an audio-visual display unit.

Two other such systems are cable distribution and direct satellite broadcasting. Cable distribution has made considerable progress in Europe, particularly in the case of smaller countries, such as Belgium and Ireland, in which the same language as that of a larger neighbor is used, as there is a demand for the distribution of programs from abroad to provide a greater choice of viewing than that available from the lim-

ited national resources. The further expansion of cable distribution will be determined largely by nontechnical factors, such as the regulations applied regarding copyright, local origination and advertising.

Much effort has been applied, in the field of direct satellite broadcasting, to the calculation of the optimum choice of positions on the geostationary orbit and the appropriate modulation characteristics. According to studies undertaken by the EBU, it should be possible to broadcast satisfactorily with the 12-GHz band four television program services, each with one or two associated sound channels, to all except the very smallest countries in the European Broadcasting Area. Because of the constraints on the transmitting-aerial characteristics, the service areas would be approximately elliptical in shape, giving considerable overlaps in the case of irregularly-shaped countries.

As well as these theoretical studies, which were undertaken largely in preparation for the World Administrative Radio Conference for satellite broadcasting, to be held at Geneva, early in 1977, the EBU is collaborating with the European Space Agency project to put a heavy satellite into orbit in 1980, which would thus allow a direct-broadcasting experiment to be organized in Europe.

In view of the virtually unchanged duration of broadcasting in most European countries, it may perhaps appear surprising that the number and total duration of international television program exchanges coordinated by the EBU has continued to increase. During the first six months of 1976, 2744 programs other than news and 1922 news items, having a total duration of 1546 hours at the origin, were transmitted compared with 2373 programs and 1552 news items, lasting 1229 hours, in the same period of 1975.

This growth reflects not only the large number of events of international interest occurring during the past year, but also the inherent economy of Eurovision participation. It has also justified the expansion of the network of permanently-leased television circuits to include circuits through Bulgaria giving access to Turkey. Negotiations for the lease of additional extensions from Rome to Athens, from Madrid to Rabat, and from Tunis to Tripoli are now in progress.

Finally, it should be mentioned that the EBU Technical Centre has published five Technical Documents on various aspects of broadcasting technology during the year. Work on preparing two Monographs entitled *Radio Relays for Television* and *Video Measurement and the Correction of Video Circuits* is well advanced, and it is expected that they will be published during 1977.

Table I. Figures Available as of 31 December 1976 for the Color Broadcast by the EBU Active Members.

Country	Number of transmitters		Colour programme hours per week		Coverage of population				Estimated No. of colour receivers (thousands)	
					Percentage		No. of persons (millions)			
	1976	1975	1976	1975	1976	1975	1976	1975	1976	1975
Algeria - RTA	40	40					15.2			
Austria - ORF-1 ORF-2	290 281	269 261	59.8 40	45.5 39.2	90.9 87.7	90.3 86.9	6.8	6.8		600
Belgium - BRT RTB	6 7	6 7	53.9 57.7	51 49.6	99.8 90.7	99.8 92.8	9.3	9.3		450
Denmark - DR	30	30	32	32	99.9	99.9	5.0	5.0	650	400
Finland - YLE-1 YLE-2	65 33	63 27	28 19	23 16	99 86	99 84	4.6	4.6	360	250
France - TF1 A2 FR3	7 1034 195	3 973 137	60 70 33 ⁶	21.5 62.1 25.5	28 98 94	12 98 80	52	52	3200	2500
Germany (F.R.) ARD-1 ZDF ARD-3	1229 1716 1690	1274 1653 1650	60.8 64 40.5	59 62 37 ⁵	97.1 97.3 94.9	97 96.7 94	60	60	10 500	8500
Ireland - RTE	21	19	64.5	59.4	98	98	3	3	125	80
Italy - RAI-1 RAI-2	804 437	- -	6.1 7.1	- -	98.7 96.6	- -	55	-	500	
Luxembourg - RTL	3	3	40	38.7	99	99	0.3*	0.3*		30
Monaco - TMC-1 TMC-2	1 1	1 1		16 16	100 80	100 80	0.05*	0.05*		5
Morocco - RTM	24	24	41	41.8	80	79	12.6	12.6	5	2
Netherlands - NOS-1 NOS-2	13 13	13 13	46.6 34.1	45.6 31.6	100 99	100 99	13.7	13.7	1700	1500
Norway - NRK	768	719	40.2	34.5	96.4	96.3	3.9	3.9	320	210
Spain - TVE-1 TVE-2	717 67	- -	30 15	- -	93.5 61	- -	30	-		100
Sweden - SR-1 SR-2	225 201	219 174	41.9 33.2	35.1 31.0	99.6 98.9	99.6 98.9	8.2	8.2	1750	1450
Switzerland - SRG SSR TSI	285 218 227	265 181 187	60 53 53		99 93 93	98.9 ¹ 90 ² 90 ³	6.4	6.3	530	480
Tunisia - RTT	7	7	32.8	14	98	98	6.0	6.0	3	
United Kingdom BBC-1 BBC-2 ITV	261 261 247	198 197 195	86.5 65.1 86.5	91 51 94	97.5 97.5 97.7	96 96.5 95.8	51	51		8500
Yugoslavia - JRT-1 JRT-2	389 141	331 42	20 23	10 19	95 30	95 25	20	20		50

* Major additional coverage in neighbouring countries

Remarks concerning the tables:

¹ Proportion of population within the coverage area of at least 1 programme service

² Proportion of population within the coverage area of at least 2 programme services

³ Proportion of population within the coverage area of at least 3 programme services

⁴ Data include duration of educational programmes that are not broadcast throughout the year

⁵ Average figures applicable in the regions in which this service is provided

⁶ Certain transmitters broadcast a further 18.5 hours per week (21 hours in 1975)

⁷ Some broadcasting in 819-lines in monochrome

⁸ Certain transmitters broadcast a further 33 hours per week, relaying TF1 in colour