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COMMUNICATIONS

INTRODUCTION

Since 1934, the development of faster and more efficient communications systems has been one of the most notable events in Australia as elsewhere. In order to understand the effects of these innovations in Victoria, this Chapter considers the important events of the time and suggests how they frequently acted as a catalyst for improving communications systems. There were two radio broadcasts of Coronation services, one in 1937 and one in 1953; famous Test matches both before and after the war; the effects of the Second World War itself; the Olympic Games held in Melbourne in 1956; the introduction of black and white television in 1956 and colour in 1975; the launching of the first satellite by the USSR in 1957; and the landing of the first man on the moon by the United States of America in 1969.

All these events had effects on Australia's communications systems and formed the backdrop against which great technical advances were made. Development of computers received impetus during the Second World War. Subsequently the combination of ever more sophisticated computers (made even smaller through the micro chip), satellites for relaying voices, signals, and images, and improvements in high frequency electronics made for communications improvements undreamed of in the 1930s.

The Chapter traces these developments through the perspective of the Postmaster General's Department which was responsible for all communications until 1975, and thereafter through the perspective of the Australian Telecommunications Commission (Telecom) and the Australian Postal Commission (Australia Post), respectively. The establishment of these two Commissions reflected not only the most convenient means of administering Australia's communications, but also the ever changing technological situation, ranging from the ability to transmit instant television images across the world to the convenience of push-button telephones.

1934 TO 1939, PRE-WAR YEARS

Communications after the Depression

In common with many other institutions, the activities and finances of the Postmaster-General's Department during the Depression ran at a low ebb. One of the signs of this was a lower level of recruitment and training of staff. However, by 1934 there were signs of hope in the Department, no less than in the wider community, and as one of the largest employers in Australia, the Department was at last able to review its personnel policies in that year. In its Annual Report for 1933-34 it stated: "A number of the cadet engineers, who were regressed during 1931, have now been reinstated on the Engineering Staff in order that they may complete their training course and thus ensure qualified officers being available to meet Departmental demands. Towards the end of 1930, as a consequence of the depressed conditions, and of the unprecedented decline which took place in all States in telephone development, the Departmental training classes for junior mechanics were discontinued, and it became necessary to transfer a considerable number of trainees to non-technical positions. The improvement which has now taken place in industrial and financial conditions, and the present upward trend in telephone development, has justified the re-establishment of the training classes and these ex-trainees are being given an

opportunity to complete their training. It has also been decided to recruit a limited number of new trainees early in 1935 to meet future staff requirements.'' A significant figure in that year was a net gain of 13,740 telephones for the whole of Australia, as well as a recorded profit in Victoria of $1,462,516.

POSTAL AND TELECOMMUNICATIONS, NUMBERS EMPLOYED: VICTORIA, 1935 TO 1982

At 30 June—	Permanent employees		Temporary and exempt employees		Part-time employees		Non-official post-masters and staffs	Mail contrac-tors	Telephone office keepers	Total	
	POSTMASTER—GENERAL'S DEPARTMENT										
1935	5,749		2,086		—		2,455	1,017	255	11,562	
1940	7,426		3,379		—		2,548	1,645	252	15,250	
1945	8,373		7,131		—		2,605	1,772	238	20,119	
1950	10,331		9,822		—		2,611	1,237	225	24,226	
1955	12,368		8,538		587		2,531	1,085	197	25,306	
1960	15,806		7,701		523		2,524	1,164	185	27,903	
1965	16,385		9,007		645		2,427	998	138	29,600	
1970	18,346		9,429		712		2,036	984	56	31,563	
1975	22,540		8,414		803		1,634	878	9	34,278	
	AUST-RALIA POST	TELE-COM	AUST-RALIA POST	TELE-COM	AUST-RALIA POST	TELE-COM	AUST-RALIA POST	AUST-RALIA POST	TELE-COM	AUST-RALIA POST	TELE-COM
1980	6,546	19,193	2,043	1,999	511	513	1,210	607	7	10,917	21,712
1981	7,491	19,265	1,262	1,875	534	497	1,168	683	—	11,138	21,637
1982	7,669	19,087	1,061	1,146	518	517	1,143	697	—	11,088	20,750

Source: Postmaster-General's Department, Australia Post, and Telecom Annual Reports.

Technical developments

The sharp decline in the number of telephone services in each State during the earlier years of the Depression, caused the Postmaster-General's Department to train special staff to canvass new business, and to dissuade those who had given notice for the disconnection of their telephone from proceeding with that intention. During 1933-34 orders for 13,351 new services throughout Australia were obtained in this way, while 2,360 cancellation notices were withdrawn. Another innovation for new subscribers in the metropolitan area and large provincial towns was the employment of female officers, to call all new subscribers, welcome them to the service, and ensure that they were familiar with the operation of the instrument. New subscribers were also supplied with a brochure describing briefly the services a telephone can render, as well as a supply of postcards, so that clients and friends could be advised of the new telephone number prior to the publication of the next directory.

TELEPHONE EXCHANGES, SERVICES, AND INSTRUMENTS CONNECTED: VICTORIA, 1935 TO 1982

At 30 June—	Number of Exchanges	Number of services	Number of instruments connected	Instruments per 1,000 of population
		'000	'000	
1935	1,650	122	168	92
1940	1,685	157	218	115
1945	1,674	182	264	131
1950	1,714	246	349	158
1955	1,757	367	505	200
1960	1,783	488	677	234
1965	1,625	632	860	268
1970	1,312	824	1,182	343
1975	1,127	1,062	1,544	r409
1980	1,124	1,355	2,054	530
1981	1,115	1,424	2,162	550
1982	1,102	1,484	2,200	554

Source: Postmaster-General's Department and Telecom Annual Reports.

In March 1934 the Postmaster-General's Department installed a short-wave transmitting station at Lyndhurst, Victoria, to provide a broadcast service to listeners in the more remote parts of central and northern Australia, who previously had not been catered for by existing national stations. In order to extend the National Broadcasting System, tenders were accepted during 1933-34 for the supply of transmitting apparatus required for the erection of seven new regional broadcasting stations in Australia, one of which was to serve the Gippsland area, and another the western area of Victoria. During the same year, tenders were also called for an underwater cable across Bass Strait, to provide telephone and broadcasting links between the mainland and Tasmania.

Another technical innovation was the use of the pneumatic tube. *The Argus* newspaper on 10 May 1934 noted its attempt to beat its rivals with news flashes sent by telegraph: "Telegraph messages will be received in *The Argus* Office within 65 seconds of their dispatch from the Elizabeth Street Post Office as a result of a new pneumatic tube service (underground), between the two buildings. It is the first pneumatic tube service between the Postal Department and a Victorian newspaper".

Economic conditions continued to improve in 1935. The year had opened on a bright note, with the return of the Melbourne G.P.O. chimes, which had been silenced for many years. The Postmaster-General's Department set an example to private enterprise to help in the national recovery by embarking on an extensive building programme. This included new automatic telephone exchanges at City West, Melbourne, Caulfield, and Brunswick. The City West, Brunswick, and Caulfield Exchanges were designed to have initial capacities of 6,000, 3,600, and 2,000 lines, respectively. At 30 June 1935, work on these exchanges varied from near completion at Caulfield to just commenced at City West. In addition, five rural automatic exchanges were installed during 1934-35 in Victoria, at Iona, Thornton, Yallourn, Somerville, and Tyabb.

The old system of providing telephone subscribers' services by open wires mounted on poles began to be phased out during 1935-36 to be replaced by underground cable.

In the early 1930s there was an increasing interest in aviation, of which the London-Melbourne air race in 1934 was a sign. During 1935-36, internal air mail services within Australia had virtually doubled the route kilometres flown in previous years. New services established during that year included Melbourne to Sydney on six days each week; Melbourne to Hamilton, six days each week; and Adelaide to Melbourne, twice weekly. This impetus to air mail development both internal and overseas and to the steady growth of telecommunications was under the leadership of the Postmaster-General's Department.

The 161 nautical miles of underwater cable planned to link Apollo Bay, Victoria, with Stanley, Tasmania, was successfully laid across Bass Strait by the Cable Ship *Faraday*, the work being completed on 26 November 1935. The installation of the associated equipment to provide telephone, telegraph, and broadcasting channels was completed in March 1936, and the cable system opened for communication on 25 March 1936.

1939 TO 1945, THE WAR YEARS

Mail arrangements

One of the ultimate results of the outbreak of war in September 1939 was the necessity to produce substitutes in Australia for many of the articles that had previously been imported. This led to many advances in the manufacturing industries, which came to produce equipment needed for the war effort.

With the embarkation of Australian Forces for overseas service, the Postmaster-General's Department had to organise special facilities for the handling of their mail. A complex system of sorting was introduced in order to meet the unique requirements of mail for the Forces overseas. Facilities provided at Military Post Offices comprised the sale of postage stamps and postal stationery; the acceptance and delivery of mail matter, including registered articles and parcels; the issue and payment of postal notes and money orders; public telephone and trunk line facilities; the acceptance and delivery of telegrams; and savings bank facilities in cases where the Commonwealth Savings Bank did not make independent arrangements. In places where troops were stationed but where the provision of a separate Post Office was not thought necessary, steps were taken to ensure that adequate postal facilities were available to the members of the Forces.

Reduced rates of postage and reduced air mail rates were introduced for correspondence dispatched to Australian Armed Forces on service within and beyond the Commonwealth. The operations of the Empire Air Mail Scheme were curtailed and the frequency of the service was reduced from three times to twice weekly. Later, further modifications became necessary.

An airmail service operating on a weekly schedule between Auckland and Sydney, which was inaugurated by a flight from New Zealand on 30 April 1940, was conducted by Tasman Empire Airways, a company formed specially to operate it. Flying boats were used on the route, and the journey between the terminal points took approximately nine hours. Shortly before the outbreak of war, the frequency of the KNILM Dutch Air Service which operated between Batavia (Netherlands East Indies, now Indonesia) and Sydney, was reduced from twice to once weekly in each direction, and the volume of mail conveyed to Australia by this service declined. The circulation of mails throughout the world had been seriously dislocated as a result of the war, and many re-arrangements were necessary in order to meet the changing conditions. Mail routes through enemy and enemy-occupied territories were, of course, no longer available, and serious difficulties were met in the effort to find avenues for the exchange of mails with the remaining neutral countries in Europe. The regularity of the sailing of mail ships had been lost to a great extent, and the time of transit of mails had materially increased owing to the necessity to use other than the normal routes. Every suitable sailing was, however, used for the dispatch of mails, and the Department had been able to maintain reasonably frequent dispatches to overseas destinations.

The war affected the Department in many ways. Thus it had to provide a Duplicate Letter Service by which letters in duplicate, or in triplicate, addressed to places beyond the Commonwealth were accepted for transmission by successive seaborne mails (or successive air mails), according to the sender's requirements. To meet the desire of senders for the transmission of letters to Britain by other than the normal route, the Department arranged special routings of letters as best it could. For prisoners of war, it laid down a complete organisation for postal articles addressed to them, and this service embraced civilian internees, as well as interned members of the Forces. The Australian Red Cross Society acted as intermediary for postal articles addressed to Australians interned abroad. Correspondence for persons in enemy countries was another special requirement and as normal postal channels were not available for the transmission of correspondence, special services were authorised under which senders could, subject to the necessary restrictions and conditions which had been prescribed, arrange for such correspondence to be sent through an approved intermediary.

The airgraph service, whereby a message written on a special form was microfilmed, the rolls of film sent airmail, then enlarged prints made for the recipient, was established on 4 June 1943. Initially, it covered mail between Australia and Britain, but by 1943-44 it had been extended to include Canada, India, the Middle East, and nearly 40 other destinations. During 1944-45 it was decided to discontinue the airgraph service. As air mail facilities to Europe, Africa, and Asia, via Ceylon, were reintroduced in July 1944, the volume of airgraph letters declined substantially and, on the inauguration of the airletter service, the decrease became more pronounced despite a reduction in airgraph fees from eight cents for civilian communications and four cents for the Forces, to a flat rate of three cents for each.

POSTAL ARTICLES HANDLED: VICTORIA 1935 TO 1982
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At 30 June—	Posted for delivery within Australia	Posted for delivery overseas	Received from overseas	Total
		LETTERS		
1935	221,563	9,249	7,242	238,054
1940	245,264	6,866	5,817	257,947
1945	259,236	5,377	4,455	269,068
1950	311,927	11,774	10,698	334,399
1955	374,327	8,077	9,368	391,772
1960	442,606	9,708	21,512	473,826
1965	542,554	27,281	44,207	614,042

POSTAL ARTICLES HANDLED: VICTORIA, 1935 TO 1982—*continued*
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At 30 June—	Posted for delivery within Australia	Posted for delivery overseas	Received from overseas	Total
	LETTERS—*continued*			
1970	559,138	32,949	44,193	636,280
1975	596,148	29,227	50,199	675,571
1980	552,401	24,856	38,708	615,965
1981	574,209	27,313	43,231	644,753
1982	589,329	27,422	42,766	659,517
	OTHER ARTICLES			
1935	26,939	3,609	2,470	33,018
1940	28,713	2,830	1,839	33,382
1945	44,745	2,095	3,641	50,482
1950	50,277	2,607	6,683	59,566
1955	53,199	3,600	8,036	64,835
1960	74,609	3,950	9,131	87,690
1965	89,312	4,481	11,867	105,660
1970	94,188	3,878	9,982	108,048
1975	102,911	3,480	11,547	117,938
1980	99,298	4,613	14,874	118,785
1981	105,818	4,207	15,498	125,523
1982	110,524	4,171	15,515	130,210
	PARCELS			
1935	1,683	42	71	1,796
1940	1,843	52	67	1,962
1945	4,752	247	139	5,138
1950	4,429	698	167	5,294
1955	4,183	157	198	4,538
1960	4,473	129	324	4,926
1965	5,183	163	380	5,726
1970	5,652	271	521	6,444
1975	5,574	391	752	6,716
1980	6,374	426	701	7,501
1981	7,436	440	740	8,616
1982	8,144	431	585	9,160
	REGISTERED ARTICLES			
1935	1,793	86	121	2,000
1940	2,219	85	99	2,404
1945	4,606	31	51	4,688
1950	4,689	92	164	4,945
1955	4,446	224	181	4,851
1960	3,239	177	244	3,660
1965	2,313	515	544	3,372
1970	2,262	584	666	3,511
1975	1,557	662	845	3,064
1980	778	474	806	2,058
1981	800	462	843	2,105
1982	756	459	834	2,049
	TOTAL			
1935	251,978	12,986	9,904	274,868
1940	272,039	9,833	7,822	295,695
1945	313,339	7,750	8,286	329,376
1950	371,322	15,171	17,712	404,204
1955	436,155	12,058	17,783	465,996
1960	524,927	13,964	31,211	570,102
1965	639,362	32,440	56,998	728,800
1970	661,240	37,682	55,362	754,283
1975	707,190	33,760	63,343	803,289
1980	658,851	30,369	55,089	744,309
1981	688,263	32,422	60,312	780,997
1982	708,753	32,483	59,700	800,936

Source: Postmaster-General's Department and Australia Post Annual Reports.

MONEY ORDERS AND POSTAL NOTES ISSUED: VICTORIA, 1935 TO 1982

At 30 June—	Money orders		Postal notes	
	Issued	Value	Issued	Value
	'000	$'000	'000	$'000
1935	542	5,830	5,888	3,846
1940	663	7,272	6,476	4,646
1945	752	11,811	6,908	5,005
1950	1,025	16,929	11,574	8,434
1955	1,654	28,274	6,890	5,960
1960	2,537	42,116	4,523	4,442
1965	3,030	100,444	3,818	4,019
1970	1,927	38,932	3,808	8,086
1975	785	34,058	3,616	13,974
1980	2,167	99,654	(a)	..
1981	2,129	107,724	(a)	..
1982	1,906	111,064	(a)	..

(a) Postal notes no longer issued.
Source: Postmaster-General's Department and Australia Post Annual Reports.

Telegrams

Under the Post and Telegraph Rates (Defence Forces) Act, which came into operation on 30 May 1940, concessional rates were applied to telegrams within the Commonwealth lodged by, or addressed to a member of the Forces, the charges fixed for such messages being five cents for a minimum of fourteen words, with one cent for each additional two words or less in the case of ordinary telegrams, and ten cents for a minimum of fourteen words and one cent for each additional word in respect of urgent telegrams.

By arrangement between British Empire Governments, Cable and Wireless Ltd, and Amalgamated Wireless (Australasia) Ltd, a special telegram service was established on 9 February 1940 to and from members of His Majesty's Army and Air Force abroad. Messages in this category were accepted at four cents per word for the text and signature only, with a minimum charge of twenty-five cents for six words, no charge being made for the words included in the address, or for the indicator Empire Forces Mail ("EFM"). This concession was later extended to British naval forces.

By special arrangement between the Commonwealth and Britain on the one hand, and Cable and Wireless Ltd and Amalgamated Wireless (Australasia) Ltd on the other, a telegraphic service was introduced in January 1941, permitting the exchange of messages between evacuee children in Australia and their parents in Great Britain. The plan permitted the dispatch of one telegram from parent to child and one in the reverse direction, each month, free of charge.

TELEGRAMS AND CABLEGRAMS DISPATCHED: VICTORIA, 1935 TO 1982
('000)

At 30 June—	To places within Australia	To other countries	Total dispatched
1935	3,306	230	3,536
1940	4,083	238	4,321
1945	8,330	303	8,633
1950	8,030	425	8,455
1955	5,019	461	5,480
1960	4,397	499	4,896
1965	4,361	608	4,969
1970	3,909	765	4,674
1975	3,015	671	3,686
1980	1,135	271	1,405
1981	1,136	132	1,267
1982	1,042	115	1,157

Source: Postmaster-General's Department and Telecom Annual Reports.

Voluntary war efforts

The war provided Post Office staff with the opportunity of helping the war effort in various ways during off-duty hours. A "Post Office Volunteer Corps" was formed among male members of the Department to undertake, should occasion demand, the protection of communication services under the control of the PMG. Female staff supported the Post Office Women's Auxiliary. Its activities covered a wide field, including the collection of funds for war and charitable appeals, the organisation of First Aid Groups, the formation of Comforts Fund and War Savings Certificates Groups, and the training of female officers in various useful directions. Officers established organisations numbering thousands of helpers who actively supported the various patriotic funds and Red Cross auxiliaries by regular cash contributions and/or personal services. In Sydney and Melbourne money was subscribed for military ambulances.

During 1940-41 an Army Base Post Office was established in Melbourne under the control of the Department of the Army, to provide means of training members of the Army Postal Services before their embarkation for service abroad. In the same year the Department embarked on a special drive to stimulate the sale of Red Cross seals, by means of postmark slogans, the display of posters, and a special appeal from the Postmaster-General to the staff. Facilities were provided for the sale of seals from tables installed at Post Offices.

Personnel

During 1942-43 a further 2,000 men throughout Australia were released to the Armed Forces, which brought the number of the Department's staff on war service to about 7,000 persons. This was achieved by the elimination of all work not absolutely essential, by the employment of returned soldiers and other men unfit or ineligible for war service, and by the use of female labour. Over 3,500 women were engaged on work normally carried out by men.

The casualties among the staff on active service were comparatively few, although 58 employees had died on service by 1942-43. At the end of June 1945, 8,000 members of the Department's staff throughout Australia were on war service; another 204 had lost their lives; and 6,000 women were being employed on work formerly carried out by men.

Wartime restrictions

As the war progressed, more and more restrictions were placed on services not classed as "essential". The need for giving absolute priority to the requirements of the Armed Forces and essential organisations inevitably created restrictions on the provision of telephone facilities and these were introduced in February 1942. New or additional exchange services were not provided unless required by the Armed Forces, organisations concerned actively with public defence security or welfare, or persons engaged in the production and distribution of vital foodstuffs. Other limitations applied in order to conserve manpower and materials, including a ban on the provision of extension services and auxiliary facilities, the substitution of one type of apparatus for another, and removals solely to meet the convenience of subscribers. Public telephones were installed in exceptional cases only, and trunk lines were not erected unless required to provide for urgent official communications. Restrictions also applied to the overseas telephone services. The radio telephone service between Australia and Britain, New Zealand, New Guinea (Rabaul), Papua (Port Moresby), Netherlands East Indies, and the Philippine Islands were closed down. The service with the United States of America, however, was partially used.

Works and equipment

During 1941, a new short wave 10 kW transmitter with the call sign VLG was brought into operation at Lyndhurst in Victoria. The transmitter augmented the existing 2 kW unit VLR, which had been designed and constructed by Post Office staff. VLG was intended mainly for internal service, but was also used for overseas broadcasts sponsored by the Department of Information.

One of the features of the war was its tendency to make Australia more self sufficient. The manufacture locally of telephone communication equipment was advanced by companies setting up for production of material such as automatic switching equipment, uniselector racks, relays, 3,000 type and 600 type relay mountings, lead covered cable, switchboard plugs and cords, hand generators, and bi-motional switch wipers and parts. Such products were previously procured from other countries, but their local manufacture not only reduced delays in obtaining essential equipment, but also released shipping space and plant capacity in the countries of other Allied nations.

By 1944, the Department was already planning for post-war requirements. In order to overtake the heavy arrears which had accumulated since the outbreak of war, and to enable it to assist in the development of agriculture and manufacturing industry in Australia, a comprehensive programme of post-war works was prepared. The first stage of the programme involved an expenditure of some $36m. The initial section of this post-war programme comprised mainly those projects which had a high degree of priority and were urgently needed improvements in the postal, telecommunications, and broadcasting services of the Commonwealth.

The constantly growing demand for services directly involving communications, posed serious problems for the Postmaster-General's Department, now desperately short of suitable accommodation to house telephone exchanges and new post offices. During 1944-45 essential defence requirements absorbed most of the skilled labour and materials available for building purposes and, in consequence, no new building works were undertaken for the Department, except those required for vital war telecommunications.

Altogether the limitation of building activities during the war years and the steady increase in Post Office business created an acute accommodation problem and, as a result, it was seen that many new buildings, extensions, and remodellings would soon be required.

NUMBER OF POST OFFICES: VICTORIA, 1935 TO 1982

At 30 June—	Official	Semi-official	Non-official	Total
POSTMASTER-GENERAL'S DEPARTMENT				
1935	238	35	2,263	2,536
1940	255	27	2,301	2,583
1945	283	19	2,208	2,510
1950	279	12	2,164	2,455
1955	299	5	2,058	2,362
1960	318	2	1,937	2,257
1965	329	—	1,807	2,136
1970	334	—	1,493	1,827
1975	331	—	1,174	1,505
AUSTRALIA POST				
1980	330	—	938	1,268
1981	332	—	916	1,248
1982	332	—	891	1,223

Source: Postmaster-General's Department and Australia Post Annual Reports.

End of hostilities

The surrender of Japan, in September 1945, resulted in the lifting of certain wartime controls on services operated by the Department. Restrictions on internal and international telegrams were gradually withdrawn. The use of code addresses and private codes and ciphers was again permitted without special authority; personal and commercial telegrams could be written in any plain language; telegrams could contain reference to shipping movements; and the inclusion of the sender's surname as a signature for transmission became optional once more. After 30 September 1945, censorship of all forms of telegraph communication in Australia was discontinued. The prohibition of radio telegrams to and from merchant ships, which was introduced on the outbreak of war on security grounds, was withdrawn from 1 January 1946 and in December of that year, the embargo on Christmas, New Year, and Mother's Day greeting telegrams, and on tipster and betting telegrams, was removed.

To cope with new broadcasting demands an additional high frequency (short wave) broadcasting transmitter was brought into operation at Lyndhurst on 21 January 1946. The transmitter was of 10 kW power and operated as a unit of the National Broadcasting Service with the call sign VLH. It served listeners in the outback areas of Australia. New short wave equipment was completed at a special centre at Shepparton. This station comprised two 100 kW transmitters and one 50 kW transmitter, at that time the most powerful transmitting station in the southern hemisphere, which was capable of providing a good signal to any country in the world, and was used for broadcasting Australian news and views to overseas countries.

1946 TO 1958, POST-WAR DEVELOPMENTS

General

The Postmaster-General's Department was now able to proceed with its post-war programme, and in 1945-46 planned that this programme would extend over three years, and would involve expenditure of about $60m.

During 1946-47, the scheme for the mechanisation of the Mail Branch, Melbourne, was advanced to the stage where plant for the handling of packets and newspapers was introduced on trial. The equipment incorporated some novel features, and the results of the trials had an important bearing upon the actual design adopted for the complete installation.

A Cabinet Sub-committee was appointed in 1946-47 to report upon the question of introducing frequency modulation (FM) broadcasting into Australia. Two experimental FM transmitters, designed and constructed by Departmental engineers, were installed in Sydney and Melbourne. The Cabinet Sub-committee also considered the introduction of television and awaited a report from the Director-General of Posts and Telegraphs, concerning the inquiries made by the Department in other countries about the latest developments in television.

The Department began its extensive programme of providing buildings to house new telephone exchanges and post offices. Not only were many new exchanges required, but a large number of manual exchanges needed to be converted to automatic working. During 1947-48, thirteen new automatic exchanges were provided throughout Australia, those in Victoria being at Glen Iris, Kew, Mordialloc, and Ringwood.

The work of updating services continued over the next few years, particularly in regard to telephone exchanges where new technical developments were constantly outdating earlier equipment. In 1948-49, eight new automatic exchanges were provided in the Melbourne metropolitan area and six in Victorian country districts. During 1949-50, thirteen new automatic exchanges were completed in the metropolitan area and twelve in Victorian rural districts. In 1950-51, five metropolitan and nineteen rural automatic exchanges were completed in Victoria, and in the following year two metropolitan and twenty-eight rural exchanges. During 1952-53, a further eleven metropolitan and thirty rural exchanges were added. However, the new services were necessary, and the money spent in this direction contributed to the stimulation of the economy and provided work for others released from the Armed Forces after the war.

During 1953-54, machines for the sorting of letters and parcels were provided for the first time in the Mail Branch, Melbourne. These installations completed the initial stage of a scheme whereby the sorting of letters, newspapers, packets, and parcels could be performed by mechanical processes.

Royal Visit, 1954

The visit to Australia from 3 February to 1 April 1954 of Her Majesty Queen Elizabeth II and His Royal Highness The Duke of Edinburgh, was Australia's first visit by a reigning Monarch. It provided officials of the Postmaster-General's Department with a complex task in arranging the handling of mails of the Royal Household, installing special switchboards for its telephone requirements, providing a wide network of programme channels so that Australia and the world could keep in close touch with the movements of the Royal couple, and cater for the varied communication requirements of press and radio reporters.

Olympic Games, 1956

The XVIth Olympic Games Broadcasting and Communications Committee was formed as early as 1952 for the planning and operation of all communications for the 1956 Olympic Games. This Committee comprised members of the Postmaster-General's Department, the Olympic Organising Committee, the Australian Broadcasting Commission, the Overseas Telecommunications Commission (OTC), and the Australian Federation of Commercial Broadcasting Stations. By 1955, 107 broadcasters from 32 countries and 36 organisations had indicated their intention to attend. To service the various broadcasting points and to provide the necessary technical assistance to the commentators, the Post Office commenced the special training of some 300 technical officers. Further facilities were also required for the press, as more than 800 accredited newspaper representatives were to attend the Games and lodge at least 10,000 words every hour for overseas destinations. News traffic to capital cities and provincial centres throughout Australia was greatly increased and thousands of picturegrams were lodged during the Games. The technical back-up needed for the Olympic Games was first assessed in 1955.

In the event the Australian Post Office and OTC were requested to provide the bulk of the communication facilities, and twelve additional overseas broadcast channels and sixteen extra interstate picturegram channels were provided, as was additional radiotelephone equipment for new services to London and Vancouver; two mobile post office units, the first ever to be provided in Australia; an emergency power plant for the Main Stadium to service Departmental and OTC equipment and the Organising Committee's Results Service; press facilities at all locations, including 300 teleprinters, and 350 tape recorders; postal and telecommunication services at the Olympic Village (Heidelberg) as well as for the public at all locations, including two portable post offices at the Main Stadium; a round-the-clock information service for overseas visitors, pocket sized directories of important telephone numbers, and guide books to Melbourne and Olympic sites; a special series of postage stamps, and postmarks, denoting the location from which mail matter was posted; and an interpreter service at the main Olympic Games Post Office, which was located at the Russell Street Exchange.

Introduction of black and white television

During September 1954, the Commonwealth Government decided that television services, both national and commercial, should be introduced progressively in Australia. Initially, one national and two commercial stations were planned to operate in Sydney and Melbourne. The Australian Post Office was authorised to secure buildings for transmitters, and procure under contract the necessary towers, aerials, and transmitting equipment required, as well as radio links between the transmitters and studios.

The inauguration of the National Television Service in Australia began with the transmissions on an interim basis from the national television stations in Sydney and Melbourne in November 1956. The stations were scheduled for completion at the beginning of 1957 but, by providing some temporary facilities, telecasts of the Olympic Games were made possible. The stations had been expanded as buildings and facilities became available. The transmitting stations operated by the Department commenced full power transmission early in 1957-58. They were rated at 100 kW effective radiated power, secured by 18 kW transmitters and high gain aerial systems. Standby transmitters of 5 kW output were provided as a precaution against interruption to service. Standby diesel alternator generating units were also provided. The aerials were sited on self-supported steel towers, 152 metres high in Sydney and 122 metres high in Melbourne.

1959 TO 1969, TECHNICAL DEVELOPMENTS

Background

During June 1959, contracts were arranged for the supply of cable and associated electronic and power equipment necessary for the coaxial cable between Sydney and Melbourne. Contracts for the project involved a capital outlay of approximately $10m. It

was the largest single undertaking ever handled by the Department. The new coaxial cable replaced old open wire overhead pole routes, which were badly outdated. Apart from providing the necessary telephone, telegraph, and sound broadcasting and television relay channels between Sydney, Canberra, and Melbourne, the scheme enabled all telecommunications services along the route to be improved. Subscribers' cables were laid in the coaxial cable trench, and spur cables, spur carrier systems, and automatic equipment for trunk transit switching were installed concurrently with the main project. The undertaking took some three years to complete, but channels were made available progressively as the work proceeded.

After installing a new form of telephone switching equipment known as Crossbar (acquired from a Swedish firm) at a small exchange in Templestowe (Victoria), and another at Sefton (New South Wales), it was decided that this form of switching would best meet Australia's future needs, both in terms of service and economy of operation. Compared with existing "step by step" equipment, Crossbar had lower maintenance charges, and increased speed and reliability.

During 1959 further progress was made towards National Subscriber Dialling, an all-numeral telephone plan. The system was planned to eventually provide nation wide subscriber to subscriber dialling, whereby any number in Australia could be dialled direct by the calling party. The Australian Post Office was also able to offer an improved service for interstate letters, at no extra cost to the sender, in that year. After 1 November, wherever delivery of mail would be expedited, air conveyance would be given without surcharge to all letterform articles of small and medium size, posted in Australia for delivery within Australia. The new service was named Operation Post Haste.

On 9 July 1962, the Australia-New Zealand section of the Commonwealth Trans-Pacific (COMPAC) cable was officially opened by the Prime Ministers of Australia and New Zealand, in simultaneous ceremonies at Sydney and Auckland. The cable linked Australia and Canada via Auckland, Suva, and Hawaii, and interconnected via a trans-Canadian broadband link with the Commonwealth Atlantic cable.

During 1963-64, a comprehensive data transmission service was set up for the Defence Services and negotiations were begun with the Stock Exchange in Melbourne for the provision of transmission links for a high speed share quotation service. In addition, a number of business houses began planning for data transmission equipment using Australian Post Office telephone lines.

Three years later the Department launched an extensive publicity programme to encourage the business community and the public to use the four digit numeric postal addressing code which was named Postcode. The use of Postcodes was allied to the electronic sorting equipment, and sought to achieve a speedy and efficient handling of the rapidly increasing volume of mail.

In March 1968, the first public on-line time sharing computer system came into operation. The system utilised the normal telephone network to establish connections between the data equipment of subscribers and a centralised computer. The new service was designed for use by small businesses in such tasks as the preparation of payrolls and stores inventories, and in situations where a computer would be required for limited research purposes.

Moon landing

The Australian Post Office assisted in the field of communications when man first landed on the moon in July 1969. Thousands of kilometres of Australian Post Office telephone and data circuits linked the National Aeronautics and Space Administration tracking stations to the overseas network and then to the United States, and 12,800 kilometres of Department television relay channels distributed the instant video pictures of the historic event to viewers over the whole continent. Satellites also had a more mundane use. To improve trunk calling to and from Western Australia pending completion of the new east-west microwave link, twenty-four circuits were provided between Sydney and Perth via the Intelsat III satellite, by arrangement with OTC. The circuits were retained in service for some nine months.

Colour television

In preparation for the introduction of colour television, the Department converted the national television transmitting stations and the associated television relay networks to colour operation. An expenditure of approximately $6.5m on converting transmitters, and $2.25m on work on the relay network was incurred. Approximately $4m was spent on replacement of television transmitters at Sydney, Melbourne, and Hobart, studio-transmitter links at Melbourne, Adelaide, Perth, and Hobart, and the conversion of the Canberra transmitter. All capital city stations of the National Television Service were converted by the end of 1974, in preparation for the official opening of the colour service on 1 March 1975. Conversion of most national regional television stations took place some eighteen months later.

1970 TO 1975, POSTAL AND TELECOMMUNICATIONS DEVELOPMENTS

Postal techniques

There were several developments in postal techniques. By 1970 all mainland States were participating in the exchange of surface mails in containers with the United Kingdom Postal Administration. There were nine cellular container ships operating on the UK-Australia route, mostly on a weekly frequency. For the posting of breakable articles, thickly padded bags in a variety of sizes were introduced at selected post offices in Victoria and Tasmania during 1971, at first on a trial basis. Their popularity soon resulted in the bags being made available at a large number of post offices.

On 5 April 1974, the Department's first Post Office Museum to be opened on the Australian mainland was established at Richmond and was officially opened by the Premier of Victoria.

As early as 1972, plans were approved for the implementation of a new mail network system for Victoria. It involved the setting up of centralised mail exchanges in selected areas of Victoria that would eliminate unnecessary sorting in local post offices, and reduce the distance over which mail was conveyed. Properties in Ballarat and Geelong were acquired for this purpose, and plans prepared for the conversion of the buildings for mail handling.

New administration of postal and telecommunication services

Early in 1973, the Commonwealth Government had announced the establishment of a Commission of Inquiry to determine the true functions of the Australian Post Office; how best those functions could be carried out; and the sort of organisation that was necessary to meet the postal and telecommunications needs of the future. The Commission of Inquiry consisted of three commissioners who reported in 1974. The Commonwealth government indicated that it "had accepted the Commission's recommendation that the Post Office should be independent of the control of the Public Service Board and that separate statutory corporations should be established to administer the postal and telecommunications services. Each corporation would have responsibility for organisation, staff, pay, and the conditions of its employees".

The Commonwealth Government in February 1975 endorsed the following principles:
(1) The Commissions were to be financed by Treasury advances subject to interest payment, each to be responsible for financing at least 50 per cent of new capital investment from internal sources;
(2) the Commissions were to be free to set tariffs, subject to ministerial approval, for basic services;
(3) past accumulated postal deficits were to be written off;
(4) the Commissions were to be independent of the Public Service Board, and the arbitral authority between the Commissions and their staff was to be the Australian Conciliation and Arbitration Commission;
(5) consultative facilities would also be established; and
(6) legislation was to be introduced to preserve the rights of existing staff, and to continue the sponsorship of the Australian Postal Institute.

From 1 July 1975, all postal services, and most of the services provided by telecommunications, ceased to operate as the Postmaster-General's Department, but were embodied in two separate Commissions—the Australian Postal Commission and the Australian Telecommunications Commission, which used the trading names of "Australia Post" and "Telecom Australia". Radio and television licensing (until abolished in 1974) and monitoring activities remained as a part of the Postmaster-General's Department. Late in December 1975, this Department became the Department of Post and Telecommunications, the title "Postmaster-General" becoming "Minister for Post and Telecommunications", and in 1980, "Minister for Communications".

SINCE 1975, POSTAL AND TELECOMMUNICATIONS DEVELOPMENTS

General

The new statutory authority, Australia Post, took over the operation and management of Australia's postal services on 1 July 1975. The *Postal Services Act* 1975 chartered Australia Post to raise sufficient revenue to cover its operating costs and to fund at least 50 per cent of its capital expenditure. Unlike its predecessor, Australia Post was to receive no government subsidy for its operations.

The Commission was, therefore, required to restructure the prices of the whole range of postal services. Substantial increases in postal charges were announced in the first month of operation, including a rise of 80 per cent in the basic postage rate of 10 cents. The new 18 cents postage charge took effect in September 1975. Mail volumes fell and by the end of its first financial year, Australia Post faced a near 12 per cent decline in mail traffic. This decline continued until 1977. In July 1978 the basic postage rate increased to 20c, 22c in March 1980, 24c in July 1981, 27c in April 1982, and 30c in October 1983.

Internal re-organisation and re-structuring of mail network

Postal operations in Victoria underwent some basic changes. Management was brought closer to the labour force by the introduction of a regional management structure where a manager took total responsibility for all postal services within his designated area. Similarly the traditional centralised system of the mail handling process was dismantled into strategically placed mail centres, each responsible for the collection, processing, and delivery of the mail within its area.

The Blackburn Mail Centre commenced operations in August 1975, followed by mail centres at Geelong in October 1975 and Ballarat in May 1976. By the end of 1977, the Victorian country network was completed with the establishment of centres at Bendigo, Seymour, and Morwell. The ensuing years saw the establishment of the Melbourne metropolitan centres at Clayton South in October 1978, and Footscray West and Preston in October 1979. At the same time, the Melbourne Central area was served by two centres. In November 1981 the International Mail Centre was opened to handle overseas air and sea mail.

Developments in postal services

Australia Post also introduced a range of new services. An "intrastate Priority Paid" service was introduced in November 1975 to supplement the existing interstate Priority Paid service which guaranteed next day delivery. The International Priority Paid Service, which was first introduced in 1974 to the USA and Britain, was extended to include Hong Kong and the Netherlands in May 1976, and later to Singapore, Japan, Switzerland, Canada, France, Malaysia, the Peoples' Republic of China, Papua New Guinea, and the Republic of Korea.

Australia Post Courier began in February 1976, providing a door-to-door service in Melbourne, interstate capital cities, and a number of provincial centres. By 1980, the service had expanded to a fleet of 84 vehicles in Victoria.

During 1976-77 a comprehensive review of services in remote areas was commenced, providing information on the history and present range of services, difficulties, and costs. Despite the high costs involved, delivery frequencies to many remote areas were increased.

The rapid growth of direct mail advertising was anticipated by Australia Post and in November 1976, the "local rate" category in householder postings was extended making it possible to substantially lower the cost of posting a standard article. In January 1977, considerably lower rates were introduced for overseas air parcels over 2.5 kilograms.

Existing services such as the Overnight Parcel Service were expanded, to include the provincial centres of Ballarat, Bendigo, and Geelong. The overseas SAL (Surface Air Lifted) service was expanded in October 1977 to include the Netherlands and Canada, as well as Britain, USA, West Germany, Greece, and Italy. SAL mail travelled by surface (within Australia and after arrival in the country of designation) and by air (between Australia and the country of destination).

In 1978, the airlift of non-standard enveloped mail was introduced at no extra cost to the customer and services such as the Postal Money Order and the Registered Publication were reviewed to provide a simpler mode of operation. Closer liaison was also established with members of commerce and industry through meetings and the conduct of mailing courses.

In July 1979, Australia Post combined with Telecom Australia to offer an electronic mail service utilising facsimile machines, and telephone service, and Australia Post Express for the fast movement of copies of documents between all capital cities, including Darwin.

An Express service was established on 14 July 1981. This service was designed to incorporate the priority transmission feature of the Priority Paid service, and generally complement that service but with expedited delivery and an optional collection service.

Telecommunications facilities

The Australian Telecommunications Commission (trading as Telecom Australia) was established on 1 July 1975 under the *Telecommunications Act* 1975. This followed acceptance by the Commonwealth Government of the recommendations of the Vernon Commission of Inquiry into the Australian Post Office that separate statutory authorities should be established to administer the telecommunications and postal services. As provided by the. Act, Telecom is responsible for the provision, maintenance, and operation of telecommunication services which best meet the social, industrial, and commercial needs of Australian people for such services. Revenue must cover current expenses each year and provide not less than half capital requirements, and services must be available throughout Australia as far as practicable at the most efficient and economically lowest charges.

Throughout Australia, Telecom employed 88,095 persons in 1982 and purchased nearly $829m worth of materials and equipment to carry out its operations. Australian industry provided some 90 per cent of these needs. In Victoria more than 20,853 persons were employed in some 180 occupational categories. Telecom's profit rose from $152.4m in its first year to $232.5m in its sixth year. As the profit is earned, it is reinvested in capital expenditure of the network and provides new services which generate additional traffic. Besides being a major employer of labour in Victoria, Telecom contributes substantially to the Victorian economy through purchases of a wide range of stores and equipment which are manufactured within Victoria—these include telephone switching equipment, telephone cable, telephones, and motor vehicles.

Since 1975 there has been a rapid growth in the number of telephone services in Victoria from 1,062,000 in 1975 to 1,484,497 in 1982—an increase of 41 per cent. Business sector demand for telex and data services has grown strongly. The number of telex services grew from 3,541 in 1975 to 8,512 in 1982—an increase of more than 100 per cent. Likewise the number of data terminals in the State has grown over the same period from 2,002 in 1975 to 15,717 in 1982—a 685 per cent increase.

To cater for the high level of demand for these services and in order to introduce a range of new Telecom services to Victoria, Telecom commenced a planned programme of modernisation of the Telecom switching network in 1977. This has involved the application of computer techniques to the control of switching operations in local telephone exchanges. Similar facilities were introduced into the telex network when a computer controlled telex exchange was installed in 1982.

The extension of the STD facility (direct dialling by the customer) throughout Victoria continued and was scheduled to be available to all Victorian telephone users by 1984, when the last of the manual exchanges is planned for conversion to automatic operation.

Between 1975 and 1982 there has been a 182 per cent increase in the number of STD calls dialled by customers in Victoria.

In 1976, International Subscriber Dialling (ISD) was introduced. By 1982, the service was available to 79 per cent of telephone customers in Victoria, with more than 80 countries able to be called directly from Australia.

Australia wide facilities are being designed to meet the diverse needs of the rapidly growing group of data users. To enable the Digital Data Service (DDS) customers to plug into the rest of the world at some time in the future Telecom has adhered to international standards.

Another business service for the data user will be Telecom's *Austpac* for which equipment is currently being installed. It will offer customers a nation wide service which will solve many existing and emerging customer data problems incorporating network and switching intelligence, such as electronic funds transfer, credit charging, electronic mail, and corporate data and message systems.

A development which will eventually benefit all telephone users is the introduction of AXE exchange equipment. Some of the facilities made possible by this computerised equipment include abbreviated dialling; individual identification on accounts for STD and international calls; redirection of calls to a Telecom operator when the customer is on holiday; and diversion of calls to another number.

ISD Call Charge Record (CCR) has already been introduced into many of Telecom's exchanges. This facility means that customers, upon request, can receive a detailed account of all ISD calls. Most metropolitan customers will have access to ISD CCR.

Another technological innovation introduced in 1981, was the Public Automatic Mobile Radio Telephone Service (PAMTS) which enables customers to have telephones in their cars. The high capacity radio paging system *Telefinder* was being progressively extended to Victoria's major regional centres.

DATEL SERVICES: VICTORIA,
1970 TO 1982

Year	Number of services
1970	143
1975	826
1980	9,755
1981	11,669
1982	15,070

Source: Postmaster-General's Department and Telecom Annual Reports.

TELEX NETWORK: VICTORIA,
1955 TO 1982

Year	Number of services	Number of internal calls *(a)*
		('000)
1955	47	2
1960	198	135
1965	635	549
1970	1,700	3,099
1975	3,541	4,528
1980	6,903	8,145
1981	7,676	9,026
1982	8,512	9,472

(a) Originating and terminating in Australia, to and from Victoria.
Source: Postmaster-General's Department and Telecom Annual Reports.

STAMP ISSUES

Stamps are a perceptive indicator of historical events and developments. There were only three stamp issues during 1934. The first of these was a set of three stamps to commemorate the centenary of Victoria. Issued on 2 July , all three values depicted an Aboriginal with spear in hand, gazing across the Yarra River at Melbourne. The second issue, released on 1 November, also comprised three values, and commemorated the centenary of the death of John Macarthur, the man who played a large part in establishing the wool industry in Australia. The final issue for 1934 was issued on 1 December, depicting the messenger Hermes winging his way around the world.

The year 1935 marked the Silver Jubilee of His Majesty King George V, and a special stamp issue was released in Australia to commemorate this event. There were three values of similar design, each featuring the King astride his horse "Anzac". The issue was released on 2 May.

A special stamp issue was released on 1 April 1936 to commemorate the laying of the submarine cable linking Victoria with Tasmania. The issue comprised two values, twopence scarlet, and threepence blue. Both stamps were similar in design, and featured a symbolic picture of Amphitrite sailing across Bass Strait in a large sea shell and holding aloft a section of the cable.

Following the death of His Majesty King George V early in 1936, two stamps were issued on 10 May 1937, for the Coronation of His Majesty King George VI. The new King was portrayed on a twopence scarlet stamp, and Her Majesty Queen Elizabeth on a one penny stamp, printed in emerald green. Several additional values were added later that year, and further values released in 1938, to complete the issue up to one pound in value. With the issue of the first two stamps in this series, an innovation by the Department was the provision of special First Day Covers. These were well received by the public, and became a regular feature.

On 1 October 1937, a set of three stamps was issued to commemorate the 150th anniversary of the foundation of New South Wales. All three stamps were similar in design and featured a group of officers of the First Fleet, led by Captain Arthur Phillip coming ashore at Sydney Cove. Over two and a half years were to elapse before the next commemoration issue, but several definitive stamps were released in 1938.

A special issue of four postage stamps was made on 15 July 1940 to commemorate Australia's participation in the Second World War. The design for each stamp contained a representative from each of the Australian Armed Forces, with the head and shoulders of a Red Cross Nurse above the three figures.

The continuing need for wartime funds was reflected in a war postage charge of one half penny per postal article (except in the case of parcels, correspondence to and from members of the Forces, and on air mail articles addressed to places abroad) which became operative as from 15 December 1941.

The first commemorative stamp to be issued for five years was released in Australia on 19 February 1945. It featured twin portraits of Their Royal Highnesses the Duke and Duchess of Gloucester. (The Duke arrived in 1945 to take up his appointment as Governor-General of Australia, the only member of the Royal Family ever to occupy this Office.)

Japan's defeat resulted in the issue of a new Australian commemorative set of stamps on 18 February 1946. There were three values, each different in design, but all commemorating victory in the Pacific area, and bearing the words "Peace 1945".

Among several stamps issued after the war was one released on 20 November 1947, to commemorate the marriage of Her Royal Highness the Princess Elizabeth to His Royal Highness the Prince Phillip. The stamp had a face value of one penny, and was purple in colour.

During the years 1948 to 1954, stamp collectors had many new issues. They included seven high values, ranging from one shilling and threepence to two pounds, issued progressively from February 1948 to January 1950. A noteworthy issue was the single three and a half pence stamp issued in October 1949 to mark the 75th anniversary of the founding of the Universal Postal Union. It was acclaimed for the excellence of its design, which featured an outback mailman on horseback with an aircraft in the distance to emphasise the passing of time. Other stamp issues included reproductions of the first stamps of New South Wales and Victoria, issued in September 1950, to commemorate the

centenary of the first postage stamps in Australia. There were also four stamps released in May 1951 to commemorate the Golden Jubilee of the Commonwealth of Australia. On 25 May 1953, three stamps—ranging from three and a half pence to two shillings—were issued to commemorate the Coronation of Her Majesty Queen Elizabeth II, while three stamps were released in February 1954 to commemorate the Royal Visit to Australia. Two more postage stamp centenary issues were made during the period, those of Tasmania (November 1953), and Western Australia (August 1954).

Publicity for the Melbourne Olympic Games was obtained before the event by the issue of a two shilling stamp featuring the Olympic Games Symbol and printed in deep blue. It was issued on 1 December 1954. The same design and value was re-issued in November 1955, printed in deep bluish green. The actual "Games" issue featured four stamps ranging from four pence to two shillings in face value, and these were released on 31 October 1956. The two high values were printed in photogravure—the first stamps to be printed in Australia by this method.

The 150th anniversary of the establishment of the postal services in Australia was celebrated in April 1959. A special stamp, depicting Isaac Nichols, Australia's first officially appointed postmaster, was issued at that time. The bi-centenary of the discovery of the eastern coast of Australia by Captain Cook in 1770 was commemorated by the issue of five 5c stamps and one 30c stamp. Besides being issued in normal perforated format, the stamps were also released in miniature sheet form unperforated. This was the first miniature sheet of stamps to be issued in Australia since 1928.

Australia Post has given special attention to philately since 1975. Against an international background of growth in popularity of the hobby, interest in Australian issues grew with philatelic sales in Australia Post's first four years increasing by 300 per cent.