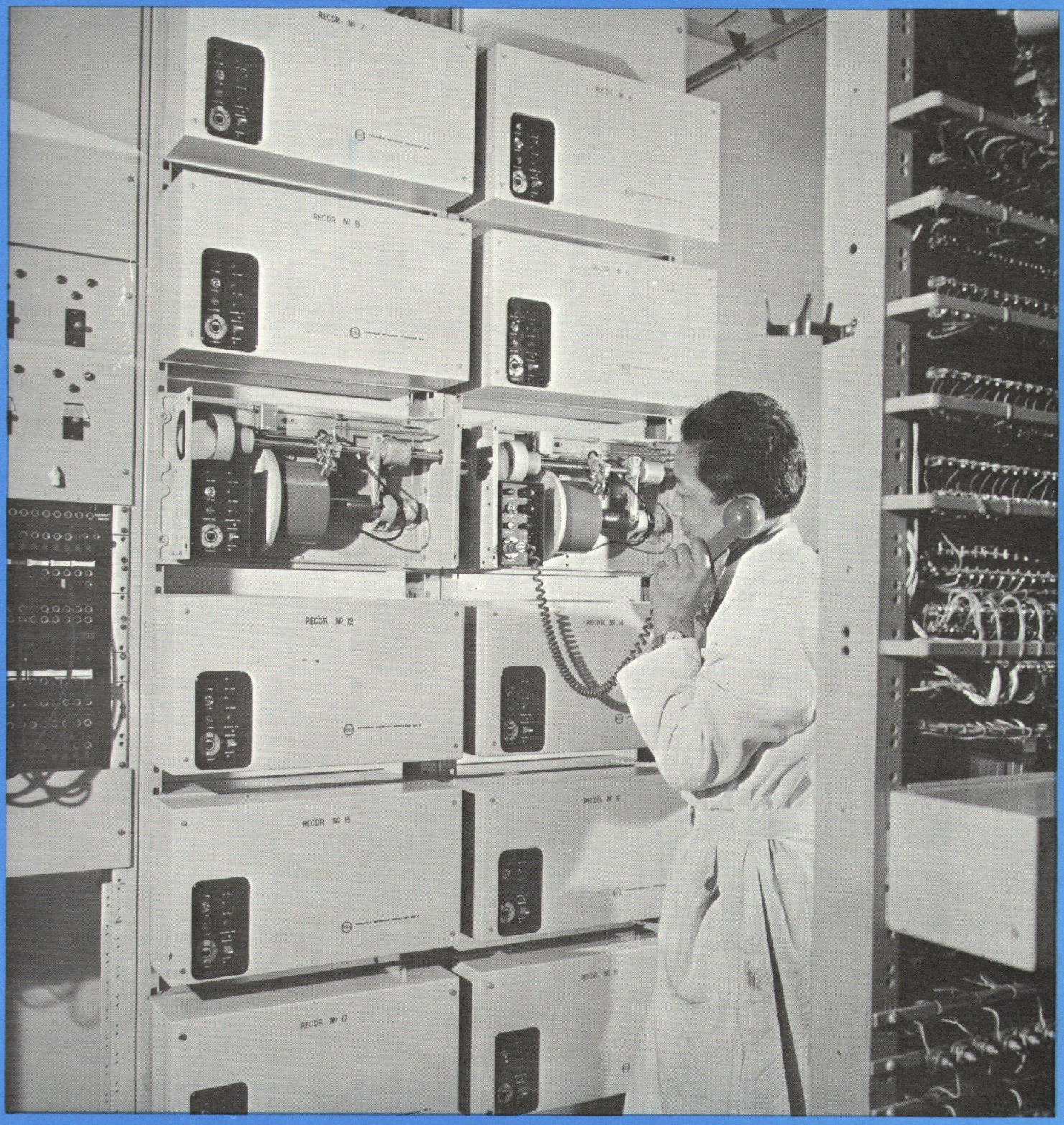
RECORDED VOICE SERVICES



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Reprinted from Electronics Australia
July 1968 edition

RECORDED VOICE SERVICES ARE

Each year, Australians make millions of telephone calls to the recorded information services provided by the Post Office. These services provide the caller with information such as the time of day, the weather forecast, the latest news, sports results, stock exchange reports and other classes of information. Many of these services use the latest type of magnetic drum recording equipment developed in Australia by the Rola Company.

The "talking clock" in Sydney and Melbourne, which began operating in 1954, was the first recorded information service provided by the Post Office. At that time, the magnetic drum principle had not been developed sufficiently for commercial application. These early units use an optical system similar to that used in film sound tracks, but with the photographically recorded voice patterns carried on rotating glass discs. This system has proved to be so reliable and durable that it is still regarded as the best for services which carry unvariable data, as in the case of the talking clock. (The system was fully described in the article "The P.M.G.'s New Talking Clock" in the January, 1955 issue of "Radio and Hobbies.")

However, for services which have to be continually changed and updated, the magnetic drum announcing system has obvious advantages, as the necessary changes of information can be made simply and quickly. The simplicity and versatility of this system have gained for it a wide acceptance, and since its perfection, the use of recorded voice messages has grown at a fast rate.

All Australian capital cities and some country towns now provide telephone inquiry facilities. Most of the recorded voice services in Australia are operated directly by the Post Office, but others—such as news and dial-a-prayer—are provided by private organisations which lease facilities from the Post Office.

Supervising technician Graham Trundwell checks Rola Variable Message Repeater units in use at the G.P.O. building in Sydney.

These services represent big business for the Post Office. The "talking clock" in Sydney alone receives on average more than 20-million calls a year and calls to other services in Sydney total more than 6 million a year. The last available figures for Sydney, for the period from July 1, 1966, to June 30, 1967, show that more than 21-million calls were made to the "talking clock" an average of 1.85 million a month or 61,000 a day. The total for the 1966-67 year was one million higher than for the previous year.

The totals of calls made to other services in Sydney during the 1966-67 financial year were as follows:

News	2,170,016
Weather forecasts	2,047,231
Sports results	950,373
Dial-a-prayer	340,373
Stock exchange reports ..	331,219
Theatre programs	267,793

The grand total for all services is in excess of 26-million calls a year. Even though a small percentage of these calls may be internal to the Post Office, and not revenue earning, it appears that in Sydney alone these services are currently earning in excess of $1-million a year for the Post Office, at the present subscriber rate of 4c per call.

The really dramatic expansion of recorded telephone information services in Australia started about 10 years ago when the Post Office introduced weather and sporting services. The Post Office in 1957 approached the Rola Company (Australia) Pty. Ltd., now a Division of Plessey Components, and asked it to produce a drum announcing unit similar to one used by the British Post Office.

The earlier British equipment had some limitations, but there was little time to make radical changes in design. The services were wanted urgently for the England-Australia cricket Test series in 1958-59.

The new services were phenomenally successful from the outset. Cricket fans in Sydney, Melbourne, Brisbane, Adelaide, Perth and Hobart made 5,250,000 calls to get up-to-the-minute scores during the Test series.

The number of calls to the sporting service fluctuates widely from year to year, depending on whether there are major sporting events taking place. The number always shoots up whenever a cricket Test series is in progress. In fact, on occasions, the Post Office makes more money out of the telephone calls to the sporting service than does the club which stages the event.

In Sydney, information is recorded at the G.P.O. building. Recordings are made by either men or women announcers who work a number of shifts from early morning to late at night. They work in soundproof studios at desk type consoles. To make a new recording the operator has only to press a button on the control console and speak into the microphone.

BIG BUSINESS

30 million calls annually in Sydney alone

The recording of a new message automatically erases the previous one.

Sporting information is kept current minute by minute as information is received from the sporting bodies concerned. Stock exchange reports and weather forecasts come in by teleprinter every few hours from the stock exchanges and weather bureaus. Other details, such as theatre programs, tourist information, snow reports for example, are obtained from authoritative sources. Each of these services uses two announcing units, either one of which is in operation while the other is on reserve or being used to record new messages.

The Post office has two "talking clock" systems in Sydney and another two in Melbourne. Each capital city has one system in reserve in case of breakdowns. If both systems should break down in the one city, time announcements could still be relayed from the other capital.

The time equipment is checked daily with Mt. Stromlo Observatory to ensure the greatest possible accuracy. In 24 hours, the equipment in Sydney may be only 2 thousandths of a second out in its timing.

One of the recorded phone information services operated by outside organisations is "Dial-a-prayer," which is run by the Seventh Day Adventist Church. In Sydney, the service operates from the Church's radio and television recording headquarters at Wahroonga, on the North Shore. The prayers, recorded by Pastor Hector Kingston, are generally changed every day.

"We have a library of tapes on hand," Pastor Kingston said, describing the system. "I record about six or eight new prayers at a time."

The prayers are recorded initially on tape and then transferred on to announcing units for relaying to phone callers. Each message lasts about 1 minute 10 seconds. "Dial-a-prayer" operates in Sydney, Canberra, Newcastle, Wollongong, Adelaide, Hobart, Perth, Bunbury, Shepparton and Hamilton.

Recording latest racing information on Plessey VMR units from the central control located at Melbourne's TAB office.

In Sydney, it gets up to 30,000 calls a month, or nearly 1,000 a day. Sydney "Dial-a-Prayer" has received about 1,500,000 calls since it began in August, 1961, and the Wollongong service has received more than 70,000 calls since it started in 1963. The great success of "Dial-a-Prayer" in Australia has prompted the church to introduce it in other countries, including the United States and New Zealand.

The principal manufacturer of this type of announcer in Australia is the Rola Division of Plessey Components, based in Melbourne. This company has developed various types of drum-announcing unit for different applications.

One is a special type of magnetic drum-recording unit developed to inform callers of changed phone numbers or of services discontinued or out of order. This is a multichannel announcing unit in which each channel accommodates a single message of up to 15 seconds duration. The Post Office asked the Rola Company to produce such equipment to aid the massive task of introducing Extended Local Service Areas (ELSA) in the Melbourne area in 1960. The equipment was designed to inform callers of numbers changed as a result of the ELSA system.

This type of recorder has a large diameter drum which revolves once every 15 seconds so that a complete message of about 13 seconds duration can be accommodated on the track, to allow a short rest period between each repeat. The first units of this type produced by Rola had provision for 24 tracks, each of which was available for a different message. Later, as the equipment was introduced into more exchanges, it was decided that a 12-track unit was more practicable. The tracks are parallel on the surface of the drum. Since it takes the drum 15 seconds to return to the beginning of each message ,it is desirable to keep all messages as close as possible to the full duration, in order to minimise breaks in transmision.

Multi-channel announcing equip-

Growing List of Recorded Voice Services

At present, there are 14 recorded information services operating in Australia, all working on a 24-hour-a-day basis. They are:

Time	Snow reports
Sports results	Theatre programs
Weather	Daily Bible readings
News	Ring-a-Recipe
Dial-a-Prayer	TAB racing results
Stock Exchange reports	Lottery results
Tourist information	Shipping information

Many of these services are also in use overseas, but some countries, notably America, have a wider range of services, including:

Train timetables	Daily horoscopes
Situations vacant	Educational talks
Election results	Road traffic and driving conditions
Dial-a-bargain	Services open weekends and holidays
Airline information	Popular music record of the week
Cosmetic advice	Myths, fairytales and Christmas stories

ment of this type lend itself to a variety of uses on the telephone system. It can be used:

- To inform callers of lines not in use, replacing the "number unobtainable" tone which people often find difficult to identify.
- To intercept calls to hospitals or other emergency centres in the event of a breakdown of lines.
- To inform telephone callers of congestion on trunk lines and the delay involved.

The drum-announcing unit developed by Rola Division for most announcing applications is of a type known as a Variable Message Repeater (VMR). These VMRs can record messages of between 10 seconds and three minutes duration. At the end of each message, a 50Hz cue pulse is applied to initiate a recycling action, which takes place within a few seconds.

The longer playing time is achieved by having the message recorded on a spiral track, only one track being recorded on a drum. The recording and playback heads are attached to a drop arm which is coupled by a parallel drop arm and pawl to a lead screw. As the drum revolves, the drop arm is moved along the drum to trace a spiral path. When the message has been recorded, a 50Hz cue note is impressed on the drum at the end of the message. In the replay mode, the drop arm is moved along the same spiral path as that taken by the record head until it reaches the 50Hz cue note. This cue note operates a relay which causes the lead screw to disengage, and a return spring causes the drop arm to return to the start position to repeat the cycle. The return action is air-damped to avoid jarring. (See picture, this page.)

When a caller phones, he is automatically connected to one of many relay sets working in conjunction with the drum-announcing unit operational at that time for the service he is calling. A caller may be connected to a drum unit in the middle of a message, but he will hear at least one complete message before the call is automatically disconnected.

Rola equipment of this type was recently exported to Hong Kong, to facilitate a major change in the colony's phone system. Because of the multilingual requirements of the system, it was necessary to have equipment capable of the maximum three minutes message time which the Rola equipment is able to provide. The announcing system is now operating, giving information about altered phone numbers in several languages.

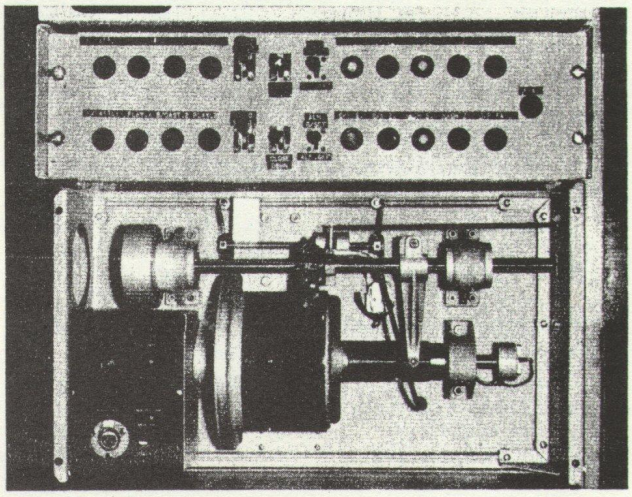
Apart from the widespread use of recorded voices by the Post Office, there are many more uses which are not so widely known. Recorded voices are providing information in lifts, for example. As the lifts move from floor to floor. in a department store, a voice issuing from a loudspeaker informs customers of the range of goods available on each floor. Another example is to be found in airports, where "mechanical" voices automatically feed the time to recording tapes. The devices have been ordered by the Department of Civil Aviation for recording and safety purposes. The time announcements will be recorded along with conversation between airport officials and aircraft in flight. The time of any conversation will thus be on record for future reference.

The time-announcer equipment can also be preset as a time alarm. In the event of an airport emergency, the units can announce the time when certain safety procedures should be implemented. The announcers voice the time in the form of four digits —such as 0915—at regular intervals, or whenever required. The recording medium, as with other magnetic drum announcing equipment, is a neoprene band impregnated with ferric oxide.

The time announcer uses a ten-channel drum, with one channel used for each of the digits 0 to 9. The drum is divided into four quadrants, and the digits are repeated in each quadrant. A separate replay head is associated with each of the ten tracks, and switching logic is used to select the correct combination of digits for any particular minute throughout the 24 hours. Thus, at 0139 hours, the switching is arranged so that the first quadrant of the 0 track is picked up by the replay head of that track, followed by the second quadrant of the 1 track, the third quadrant of the 3 track and finally the fourth quadrant of the 9 track.

The time announcers are among the latest recorded voice-announcing equipment developed by the Rola Division of Plessey Components.

Another type of magnetic drum-announcing equipment, the Auto Announcer, is used to provide a single 5-second message which needs to be repeated constantly. The unit was developed after the Overseas Telecommunications Commission asked the Rola Division of Plessey Components for a unit to advise operators on the newly opened COMPAC cable of the progress of their calls.



This photograph shows the main elements of the magnetic drum unit used with the Rola Variable Message Repeater system. Coming from the centre of the drum and to its right is the lead screw which causes the record and replay heads to move across the surface of the rotating drum to trace a spiral path. The heads are resting on the surface of the drum from a drop arm connected to the rod above the drum. Also coming from this rod is another drop arm which carries a pawl. When this pawl is engaged in the lead screw, the rod assembly will move to the left, carrying the head across the drum. When the replay head reaches the end of the recorded message, it encounters a 50Hz cue signal which causes the pawl to disengage from the lead screw. The rod assembly is then returned to the start position by a spring.

The equipment developed proved extremely successful and has since lent itself to many other uses. A number of electricity authorities adopted this type of unit to voice a constant announcement identifying the exchange areas in their own telephone systems. The equipment has been installed by the Electricity Commission of N.S.W., the Snowy Mountains Authority, and the State Electricity Commission of Victoria.

Any telephone service that involves a repetitive announcement can make use of these drum-announcing units. The equipment can relieve telephonists of much routine and often tedious work and can also mean savings in telephone service operations.

Mechanisation of these voice services is a logical development in the telephone and telecommunication world. Automatic telephone systems have been built up to replace the human element in the switching of telephone calls. It is only natural that telephone engineers now should seek some way of "mechanising" the human voice. ■