

# AUSTRALIA'S TV PIONEERS

When did the first television transmission take place in Australia? Would you believe 1949? or even earlier, perhaps 1939? In fact, the exact date for this historic occasion was January 10th, 1929, when test transmissions began from the Melbourne radio station 3UZ.

By Harry Tyrer

The results would certainly not compare with modern television. In fact, the transmissions were made using a low definition system of 24-lines per picture, and without sound.

The organisation behind these demonstrations was Television and Radio Laboratories Pty. Ltd., formed by a Melbourne radio engineer, Mr Donal McDonald, who became its first managing director. The technical side of the transmissions was handled by Mr Gilbert Miles. Mr Miles was previously chief engineer with a Hobart Radio station, and was one of Australia's early radio amateurs, with callsign VK3IL (He now lives in the Sydney area, and has callsign VK2KI.)

These two men apparently had boundless enthusiasm for the new art, and no doubt, in later years, permitted themselves an indulgent smile when assessing in retrospect their high hopes against the comparatively crude system they used, and the correspondingly crude results obtained.

In September, 1928, the company published the first issue of a magazine entitled "Radiovision," described as "An Australian journal devoted to television and allied subjects." The explanation of the journal's title in this first issue shows the attitude of mind of these concerned with the early experiments:

## RADIOVISION OR TELEVISION!

Is this new art as applied to Broadcasting to be called by the old name — Television — or by the newer one — Radiovision?

Attempts at television date back to the early eighties, and were on very similar lines to those now generally employed (except that there was then no such thing as a valve amplifier), and the name Television was naturally adopted, for at that time radio was not in existence, but as it would now seem that as greater development is likely to take place through the medium of broadcasting than through physical line channels, a differentiation would appear to be, not only justified, but necessary.

The proposal is to employ the term Television where physical communication channels are used, and Radiovision where the transmission is by radio. We will, in the future, adopt this nomenclature ourselves and confidently recommend its general adoption. In Australia, we are on the eve of big things in Radiovision, and much confusion will be avoided if matters of this nature be made clear at the outset.

That the enthusiasm of the editors of "Radiovision" tended to outstrip the state of the art is to be found in the encouraging announcements which appeared in many issues of "Radiovision." One such pronouncement says: "... we have no hesitation in expressing the confident opinion that within a year every broadcasting station will be a Radiovision station too." (October, 1928).

Optimistic statements of this kind produced a reaction in official circles, where a more tempered view of "Radiovision" was held. In a following issue of "Radiovision" there is a brief

LEFT: A section of a cartoon film strip used for the 1929 experimental transmissions.

mention of a statement by the Postmaster-General, warning the public "against investing in concerns which may hope to profit by the introduction of a television service."

Before embarking on its public "Radiovision" broadcasts, the company had been working on a facsimile system for sending pictures by wire, hence the use of the word "television" in its name. They had constructed prototype equipment capable of reproducing pictures of good standard, and were pushing ahead with a scheme to transmit news pictures to country newspapers, by radio.

They had proved the feasibility of the system by transmitting pictures from the laboratory in South Melbourne to the home of Mr Miles, in Glen Iris. Shortly after this, Mr Miles was married, and the members of the company's staff sent a congratulatory message to his home via the system which the newly-weds read at their wedding breakfast. Mr Miles believes this is the first time such a message was transmitted in facsimile form anywhere in the world.

The laboratories where the experiments were conducted were closely guarded to prevent competitors from gaining knowledge of the work being carried out. A report which appeared in the Melbourne "Age" some years afterwards says the laboratory "was fitted with burglar alarms on every door and window, and the windows were guarded by heavy iron shutters. Here, in an atmosphere of profound secrecy, experiments were carried out, and apparatus built by McDonald and Miles. Such a veil of secrecy surrounded the place, in fact, that it was common gossip in the district that the experimenters were building a new type of submarine."

In the process of their work, the experimenters apparently became interested in the idea of sending pictures to private homes, by using apparatus attached to ordinary radio receivers. From there, the idea of sending moving program material for reception on a Baird-type scanning disc receiver was advanced. The experimenters therefore set about preparing slides, and cartoon type strips incorporating motion, for transmission. They commenced sending pictures, using this material, from Station 3UZ on January 10th, 1929. Shortly after, Station 3DB was also used.

The transmissions were quite simple. To use the words of the experimenters, as published in "Radiovision," February, 1929:

"... the object is to demonstrate the soundness of principles rather than to show perfection in detail. A compromise has been found desirable, mainly with a view to keeping the cost of the construction of the transmitter within reasonable limits, and to provide the maximum light at the receiver.

"The subjects that have been selected, and which clearly demonstrate the operation of the system, are:

- (a) Silhouettes and geometric figures with definite outlines.
- (b) Motion pictures on similar lines to (a).
- (c) Definitely graduated half-tone test slips.

"We do not, at present, propose to transmit subjects containing greater detail for several reasons, the first being the increased cost of construction and maintenance of our transmitting appliances, and the second to enable such matter

as we broadcast to be transmitted without interference to other broadcasting stations, and to permit them to be received without abnormal distortion by anyone with the aid of an average set of good quality."

The reference to "interference to other broadcasting stations" draws attention to the limited bandwidth available to the experimenters. They were operating within the normal broadcast band, using a normal broadcast transmitter, and had to restrict their modulating frequency to the 10KHz allowed for operation of broadcast stations. Compare this with the 5.5MHz of today's TV stations, and it is not difficult to see why a 24-line system was used.

The transmitting system employed a Nipkow disc and photoelectric cell. This system suffered from all the limitations of the mechanical scanning process which led to its eventual abandonment in favour of the electronic scanning system. Television as we know it today, based on the cathode ray tube, was not then a practical reality, although the British engineer A. A. Campbell-Swinton had suggested such a scheme in 1908, and described a complete system in a paper in 1911. (See "Electronics Australia," August, 1967, page 25). His scheme was for pictures transmitted by landline, however, since radio broadcasting was not then possible, the valve having not been invented. At the time of the early Australian experiments, all schemes for broadcast television were based on mechanical scanning methods, as exemplified by the Baird system.

It may be as well at this stage to consider the receiver system being advocated by "Radio-vision." The vision receiver was regarded as an adjunct to the normal domestic broadcast receiver. This picked up and amplified the transmitted signals, and the output was fed to a neon lamp instead of to a loudspeaker. The modulations caused the lamp to change in brightness according to the instantaneous amplitude of the transmission, which varied according to the light and shade of the image being scanned at the studio. A rotating disc of the Nipkow type in front of the neon lamp produced the scan lines which recreated the picture in crude form, with the limited number of lines used for the system.

The scanning disc had to run in synchronism with the disc used for the transmissions, and was controlled manually by means of a speed regulating device for the motor driving the disc.

A simple system such as this was well within the capabilities of the radio experimenters of the day, and it is this very simplicity which apparently engendered such wild hopes on the part of the early experimenters.

It is not surprising that this simple apparatus was capable only of crude results. Nevertheless, to the television enthusiast, the mere fact that it worked at all suggested endless possibilities for television. In its January, 1929 issue, "Radio-vision" made the following comment: "It is safe to say that before the end of the coming winter, radiovision will occupy a very important place in broadcasting circles."

Despite the high hopes, and the brave talk, the "radiovision" experiments were abandoned in 1929. The depression was on the way, and no doubt by now the experimenters were beginning to realise the limitations of the mechanical scanning system. The company therefore decided to concentrate on the manufacture of broadcast receivers, for which there was a steady demand. They continued an active interest in picture facsimile transmission, and tendered for the supply of picturegram equipment for the Sydney-Melbourne system which went into service a few years later. Their tender was not accepted.

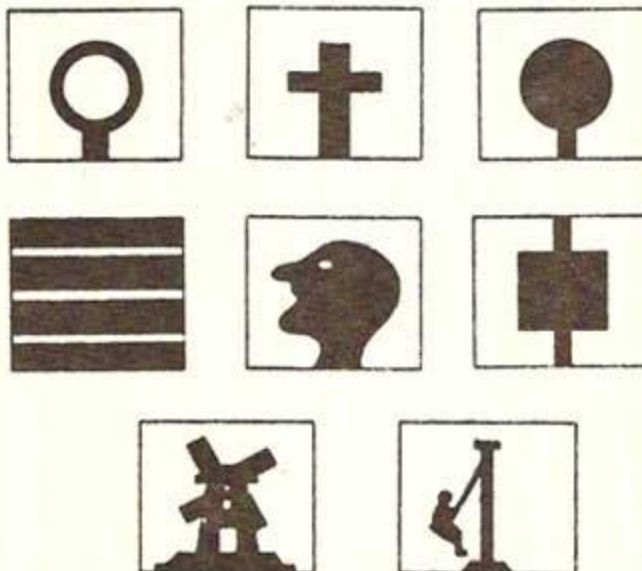
There were other Australian experimenters interested in television transmission at the same time as the experiments described here, but the broadcasts from 3UZ and 3DB were the first public broadcasts in Australia. Nearly 30 years were to pass before the dream of a public television service became a reality. ■



ABOVE: Mr Gilbert Miles operating a facsimile device for transmitting pictures by radio, developed by Television and Radio Laboratories Pty. Ltd.



RIGHT: An electrochemical picture transmitted by radio with the Television and Radio Laboratories equipment.



Examples of the simple outlines transmitted from Stations 3UZ and 3DB in 1929. The two lower diagrams are single frames from a moving picture sequence.