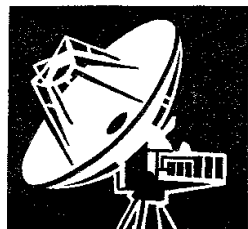


RESEARCH LAB REPORTER



PRODUCED BY RESEARCH LABORATORIES, 59 LITTLE COLLINS STREET, MELBOURNE

"RESEARCH LAB REPORTER"

Research Laboratories' 1969 Open Days

The 1969 series of Open Days in the Laboratories are behind us and, perhaps, now is the time to think again on the reasons that led to their taking place and on the results they achieved or, at least, we think they achieved.

There were a number of factors to consider when the idea of holding Open Days was first brought forward. First there was the slowing down of normal work that would occur while the features were being planned, installed and exhibited. There was the cost of additional material and of the labour being diverted and there were the physical problems to be faced in providing for large crowds of people. Against these factors were balanced the advantages which, it was thought, would flow from such an exercise.

Much of our work is customer service, that is to say we are organised to solve existing problems, to forecast future problems and advise how they may be avoided, and to foresee future needs, and devise better ways to meet them than now exist. There seemed to be value in reminding other technical areas in the Post Office of the assistance we are able to provide. Then, again, as the major telecommunications research centre in Australia, the Laboratories have a continuing responsibility to encourage universities and colleges to give prominence to telecommunications research in their education programmes. This is double edged in that while we have in mind the wider aim of the future well-being of telecommunications in Australia, we also seek the reward of ensuring a continuous input of talent into the Laboratories. One way of informing both the teachers and the students on the status of the art and its career opportunities and satisfactions was to attract them into the Laboratories to look and to discuss.

Another factor "for" concerned the general public and their civic leaders. Unlike a private business, the whole of our shareholders are also the whole of our customers. As a public utility, the Post Office

is answerable to both. Open Days suggested the chance to show people who, otherwise, would not have such an opportunity, that the Post Office is a good deal more than a public telephone booth and a box on the corner where mail is posted. Finally, there was the factor of professional pride in our work. Open Days would allow us to demonstrate our achievements and goals to other research workers. New alliances could, thus, be formed and mutually rewarding discussion exchanged.

All of this has been a little long-winded but these were the factors to be weighed before deciding whether the Open Days should proceed or not. It was decided to go ahead and they were held during the third week of September, as you all well know. The results have been more than satisfactory. Almost 4000 visitors registered at the various buildings but indications gained in other ways suggest the figure was much higher. The 1960 Open Days attracted 750 visitors. All of the people we hoped to reach were strongly represented. Many congratulatory messages have been forthcoming on the high standard of the exhibits, the quality of the services and the arrangements, and on the courtesy and the interest of the Laboratories' staff. There seems ample evidence that many people were impressed at the nature, the scope and the standard of our work, and some were more than a little surprised.

Whether we have achieved all we set out to do cannot be fully known at this time. Such can only be learned from future events, if it is learned at all. However, it can be said that the magnificent efforts of all members of the staff ensured that the best use was made of the opportunity to present examples of our work.

Speaking personally, the occasion gave me a sense of pride in our establishment and our people. I hope, you too drew the same satisfaction.

(P.R. BRETT)

Overseas

Assignments

C.C.I.R. Study Group Meetings, Geneva.

Ed Sandbach, Duncan Gray, Eric Craig and Harro Brüggemann are now back from a rather exhausting time in Geneva where they attended various Study Group meetings of the C.C.I.R.

Many issues, vital to the future development of radiocommunication, broadcasting and television services at both the national and the international levels, were discussed at the respective Study Group meetings, and major recommendations were formulated for adoption at the next C.C.I.R. Plenary Assembly.

Subsequent to these meetings, Harro spent three weeks in Germany, the U.K. and the U.S.A. carrying out investigations into developments in special television facilities, particularly T.V. Phone systems.

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C.C.I.T.T. Study Group Meetings

Harry Wragge, Switching Group, departed for Geneva on 24/10/69 to attend a meeting of the C.C.I.T.T. Study Group, Special D, which is concerned mainly with I.S.T. and P.C.M. He will be away for approximately seven weeks during which time he will visit England, Europe and Japan to discuss the latest development in the field of I.S.T.

* * *

Do You Know ?

FLUSHED

A British Post Office engineer received a nasty shock when he visited the smallest room on the eighth floor of the Birmingham radio tower. He pulled the chain and disappeared under masses of soap bubbles. And within minutes, nearly every floor of the 500-foot building was knee-deep in suds , and engineers were shovelling them out of windows.

Details of the incident were revealed when a plaque commemorating the opening of the tower was unveiled in December, 1968.

The day of the bubbles was in 1966, when two members of the cleaning staff poured away used detergent and it re-appeared in the water system all over the building.

* * *

Instant Expertise

A new aid for preparing speeches, briefings, etc. is circulating in the Defence Department in Ottawa. The "Buzzphrase Generator" gives instant expertise on matters pertaining to defence. Here it is:

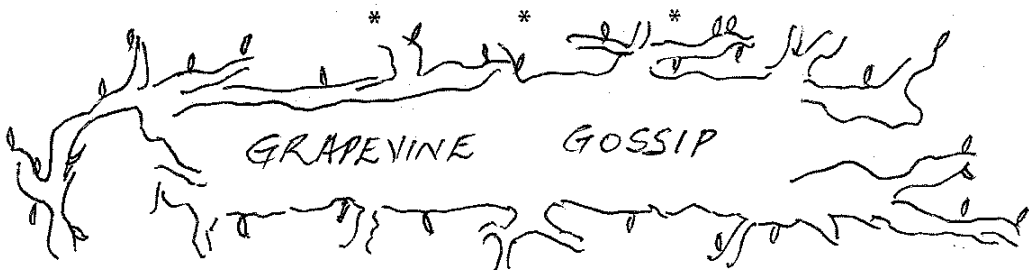
<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
0 integrated	0 management	0 options
1 total	1 organisational	1 flexibility
2 systematized	2 monitored	2 capability
3 parallel	3 reciprocal	3 mobility
4 functional	4 digital	4 programming
5 responsive	5 logistical	5 concept

Instant Expertise (Cont'd)

<u>Column 1</u>	<u>Column 2</u>	<u>Column 3</u>
6 optimal	6 transitional	6 time-phase
7 synchronized	7 incremental	7 projection
8 compatible	8 third-generation	8 hardware
9 balanced	9 policy	9 contingency

The method is simple. Think of any three-digit number. Select the corresponding buzzword from each column. Put them together and WHAM! POW! ZAP! You sound just like you know what you're talking about.

For instance, take the number 257. You get "systemized logistical projection." Would you prefer 349 (parallel digital contingency?) or 935 (balanced reciprocal concept)? You don't know what it means, but don't worry, neither do "they". The important result is that the user now has the perfect aid for preparing any communication on the subject of national defence.



Albert Seyler returned this month from recreation leave looking as fit as a fiddle. After spending the first week on the snowy slopes at Falls Creek, he motored to the Snowy Mountains via Canberra then around the coast for a short stay at Lakes Entrance.

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Proud grandfather (for the second time) is Ross Pitkethly, Laboratory Services, whose daughter, Sandy, presented the family with Joanne early in September. It's up to you, Ray Jepson, to pass the "Staff of Office" back to Ross for display in his office until the honour is passed on.

* * *

We, reluctantly, bid a temporary farewell to Tom Broughton, Admin. Officer, who has been selected to take over the arrangements for the forthcoming C.C.I.T.T. meetings to be held at the Southern Cross Hotel in February 1970. It is expected that Tom will be away from the Labs. for 5-6 months.

* * *

Alas and Alack! Gone are those fine pair of mutton chops from the countenance of Bill Yelverton. Reason - Bill's daughter is to be married shortly. Whilst on this subject of face fungus, also missing is the fancy portion of chin foliage from Charlie Bates. Despite the rumours started by chief stirrer Alva Allen, "PRB" was not responsible for the alteration to Charlie's smiling countenance. Incidentally, Alva, we didn't think it possible that you could blush so profusely when confronted with the evidence of your evil doings.

* * *

Radio Propagation's slide show during "Open Days" proved to be very popular if only to have a sit down and take the weight off many weary feet. One rather dazed gentleman, after being invited to see the slides, parked himself on a chair "outside" the viewing room, seated between Jenny Jans and Violet Vrtaric with rather a vacant look, waiting for the show to begin.

* * *

Congratulations to ex-Multichanneler David Shaw who designed the prize winning, modern kitchen in the recent State Electricity Competition, which was on show for Expo 69. David's prize included a number of electrical appliances and, being a bachelor (at the moment), he is not in the position to use some of them. Therefore, he is giving the Labs' members the first opportunity to purchase these items at prices well below the lowest available price in town. (See classified section page.)

* * *

Never a dull moment in the library area! Ask Merl Cuzens. The Planning Branch library is now located on the 11th Floor of 172 Williams Street under the control of Lorraine Hawkes. Unfortunately, this month, we lose two of our popular and most obliging Library Officers - Judith Quilter and Ros Whitton. Judith is returning to medical librarianship at the Victorian Eye and Ear Hospital, and Ros is off to Canberra to join the C.S.I.R.O. Computing Laboratories. We wish them every success in their new positions.

* * *

Two of our steno-secs, Lucy Varrasso and Lorraine Peoples, are wearing very worried looks lately. Both are involved in bridesmaids' functions during the next few months and are most concerned that they are getting close to the third occasion - "always a bridesmaid, but ... etc." However, we think, their worries are quite unnecessary.

* * *

Six chocolate eclairs and two napoleons to four pickled onions (large) - not a lunch order but just a sample of some of the heavy bets wagered on the outcome of the football grand final by members of the Block A tea club. In future, such wagers will be discontinued. Due to the stirring of Frank Arter, some members "got their Irish up" and a donnybrook was narrowly avoided at settling time.

* * *

Barry Cranston, Lab. Equipment, is looking very suntanned since his return from a wild time at Brampton Island. Rumours have it that the bird life in that vicinity was most upset at his departure.

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Speaking of birds (feathered types), Ray Jepson is causing great frustration in his neighbourhood since he has his rotary aerial in operation.

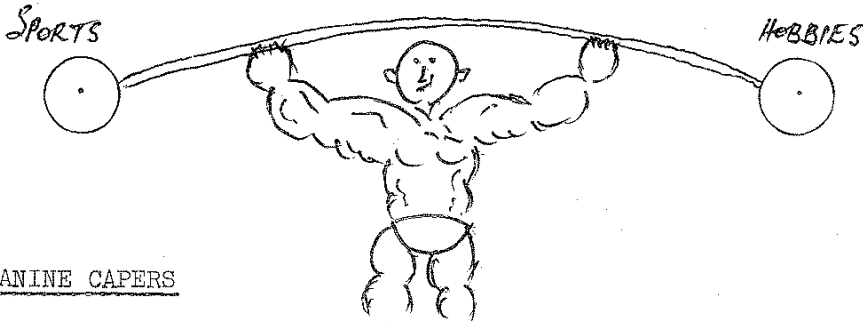
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Around the Labs., we have philatelists, numismatists and lapidarians, but does anyone know the correct title for a person who collects parking tickets? Perhaps, Kevin Bartlett, Lab. Equipment, can help us.

* * *

Brian and Sue Lafferty have recently moved into their new home at Thomastown and Brian is concerned at all the labour required to get his garden into shape. Consequently, there is continual "open house" to all those who arrive with spades, wheelbarrow, etc. Free refreshments will be provided and Brian will be pleased to hear from you - (7908).

* * *



CANINE CAPERS

Congratulations to Bob Harvey (Propagation) and Tom Lindsay (Admin. Services) for their recent successes at the Royal Melbourne Show.

Bob's prize airdale terrier Ben Nevis took the honours of Best of the Breed, and Tom's chow bitch, Leenoi Lady Tamiko, collected first prize in her limit section.

It seems, Bob's airdales are excellent watchdogs too. One of Ben's puppies caught an intruder in the act of entering a window in the neighbour's residence - he burst through the paling fence and quickly got to the seat of the trouble and held fast until the constabulary arrived.

* * *

GOLF

Neil Wain, Propagation, brought further honour to the Labs. by taking off the Quigley Memorial Trophy at the recent A.P.I.' Golf tournament held under bogey conditions at the Mornington Golf Club. Unfortunately, Barry "El Greco" Woolcock, cracked under pressure and will not disclose his score. Much muttering going on about taking up caddying instead from now on.

* * *

FOOTBALL

Congratulations to two of our champions, Kevin Bartlett and Tom Lindsay from Watkins. Kevin has the honour of playing in two premier-ship teams for the mighty Tigers in recent years and topped it off by helping to defeat the South Australian premiers in Adelaide on Oct. 11. Tom finished a great season of football by being a member of the successful Boronia club who were premiers in the Eastern Districts League.

* * *

MODEL AIRCRAFT

Wally Schubach, General Services, spends much of his leisure moments playing with toy aeroplanes. However, don't smirk - this is a highly qualified hobby. Wal is an active member of the Dandenong and District Aircraft Radio Control Society. There are approximately seven similar societies which operate in the State of Victoria. A fully equipped operator requires about \$500 worth of gear and these radio controlled planes, with wing spans from 3 - 5 feet, maintain speeds from 80 - 100 m.p.h.

At a recent contest, held in Wagga, between Vic. and N.S.W., the Victorian squadron made a clean sweep winning all four sections of the competition.

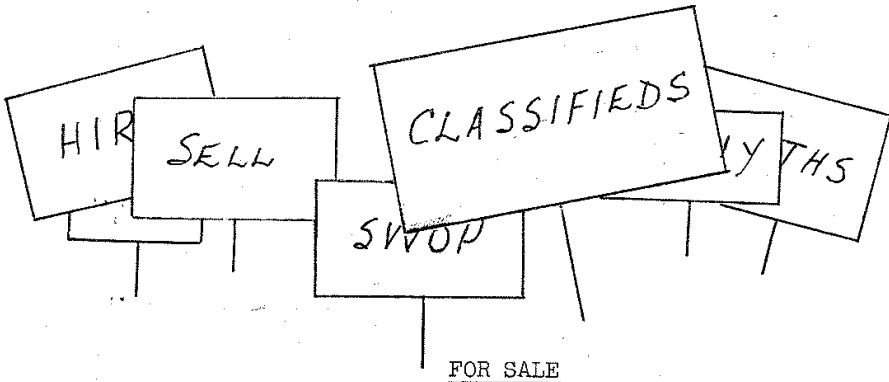
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BUSH - WALKING

Many of us know that Greg Martin, Multichannel Division, is an experienced bush walker. However, we didn't know that he was a member of the Search and Rescue Squad which took part in the search for the missing Cessna aircraft in the Healesville-Lilydale area.

Congratulations, Greg, in carrying out a difficult mission and, also, for sacrificing your time for such a worthy cause.

* * *



Lounge Chairs - 4 off, 1 bed settee (requiring repairs) - \$10.00 ea. item.

Laurie Melton 6295A

* * *

Electric Stove - fully automatic - elevated model. Westinghouse
Princeton - tinted glass oven door. \$198.00

Refrigerator-Freezer, 13 x 5cuft - Kelvinator, Model No. 789.
\$398.00

Dish Washer - General Electric - permanent installation type -
under the bench mounting. \$298.00

The prices for the above three appliances are equal to approx. 85% of the lowest quoted price, following a survey of four discount houses. Sales will be strictly cash and appliances will be delivered from the manufacturers to the purchasers. The usual manufacturer's guarantees will apply.

David Shaw 416264 (private)

* * *

Black Shoes, Brand New, Rubber Soles, Size 7, 1 Pair, Best Offer.

Stephen Brady 6425F

* * *

ENGAGEMENTS

Admin. Services Elaine Cameron to Ken Irby.

Computer Group Sue Cheney to Ian Pocock.

* * *

MARRIAGES

Admin. Services Jill Glen to Daniel Read.

Propagation Jenny Jans to Barry Thomas.

Chemistry Robert Kam to Judith Hood.

Lab. Equipment Peter Dalliston to Robyn Wiggins.

Pulse Systems John Semple to Carol

Lab. Equipment Heather Bentley to Michael Durrant

PROMOTIONS

Congratulations to:

Ted Hulley, Switching Group;

Norma Light, Computer Group;

Alan Carter, Switching Group.

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A hearty welcome is extended to:

Adele Jabour, Sub-Sectional Clerk, Equipment Development.

John Murphy, Engineer Class 2 (returned from overseas).

Wally Schubach, S.T.O., General Services.

Gail Morrison, J.P.O., Principles and Transmission.

John Grant, Engineer Class 1, Propagation.

Graeme Brownfield, T.O.1, Lab. Equipment.

Toni Williams, Typist, Block T.

Brian Heyes, T.O.1, Radio Equipment.

John Harris, Fitter and Turner, General Services.

Fond farewells to:

Bernadette Deylen, Typist, Block T.

Judith Quilter - Library.

Ros Whitton - Library.

David Clerke - Model Shop (to Drafting).

Fond farewells (Cont'd)

Tony Whelan) to Puckapunyal - National Service

Frank Frendo) Training.

* * *

LABS' GOLF DAY

Saturday, 8th November - Whittlesea Country Club.

Hit off 8.30 a.m. - Green fees \$1.50.

Organiser - Alva Allen 7964A.

Secret Handicaps.

* * *

Postwork Poser

Solution to Probability Paradox in Last Month's Issue

The only correct solution received to last month's paradox was from Mr. Norm Smith. Unfortunately, owing to a technical infringement - his entry was accompanied by a sneer instead of the correct entry fee of 20c - he is ineligible to collect the prize which, therefore, jacks-pots to four coca cola bottle tops for this month's problem.

Now, for the solution to last month's paradox which, for those of you with short memories, concerns a binary coded P.C.M. channel with an error rate of 10^{-3} (i.e. an average distance between errors of 1000 bits). Now, if we take a randomly chosen point in the bit stream, the average distance to the error following this point is 1000 bits, and the average distance back to the last preceding error from the randomly chosen point

is 1000 bits, so that the average distance from the error preceding to the error following the point is 2000 bits.

The paradox arises from the assumption that a randomly chosen point will lie in a randomly chosen interval. If by the phrase "randomly chosen" we mean chosen in such a way that any members of the set (of points or intervals) had an equal chance of being chosen, then a randomly chosen point is much more likely to lie in a long interval than in a short interval (interval meaning the interval between errors), and the probability of an interval being selected by this method is proportional to the length of the interval. The mean length of an interval chosen in such a way that the probability of it being chosen is proportional to its length is twice the average length of the exponentially distributed interval.

All right, for the benefit of those who feel that the last statement should be proved mathematically, and not merely inferred from the paradox, we'll put it this way:

The p.d.f. (probability density function) of the lengths of the intervals in a Poisson process is

$$\lambda e^{-\lambda x},$$

and the mean length is then

$$\begin{aligned} & \int_{-\infty}^{\infty} x \cdot f(x) \, dx \\ &= \int_{-\infty}^{\infty} x \lambda e^{-\lambda x} \, dx. \\ &= \frac{1}{\lambda} \end{aligned}$$

to the mean interval length equals 1000 bits.

Now, if the distribution of intervals chosen by a random point is proportional to x , and also proportional to the original p.d.f., it must be of the form:

$$g(x) = k x e^{-\lambda x}$$

Since this is a probability distribution function, the integral over the full range 0 to ∞ must equal unity, so integrating and equating to unity, we find $k = \lambda^2$.

Now, the average value from this distribution is given by integrating $x g(x)$ over the full range, i.e.

$$\epsilon(x) = \int_0^{\infty} x \cdot \lambda^2 x e^{-\lambda x} dx$$

Now, twice around the mulberry bush with your integration by parts and we find

$$\epsilon(x) = \frac{2}{\lambda}, \text{ or twice the average value obtained before.}$$

Just what we expected, and if we keep this up, we'll be able to sit for our first year maths again, won't we?

Now, this month's question is not really a puzzle or a problem, just a rather puzzling question which engineers usually brush aside. The question is in two parts:

- (a) What is the meaning of the negative frequencies in the Fourier Transform?
- (b) Why have engineers always been able to get away with considering only the positive half of the spectrum, and what type of electrical signal would this be inadequate for?

(Phineas Glick) 7306

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In Memoriam

Georgina Ida Blake

We of the Research Laboratories extend our sincerest sympathy to our colleague Joe Blake for the very sad and sudden loss of his loving wife, Georgie, who passed away on 23rd October following injuries sustained in an automobile accident.