FOR STAFF USE ONLY

RSRS Newsletter

No. 141 February 1973

A LATE NEW YEARS RESOLUTION:-

"GET RID OF THOSE CHRISTMAS TREES"

Not as one might think an anti-"Plant-a-tree-year" slogan but a plea to everyone to inspect their electrical Christmas Trees - those forests of trailing leads and multiplugged sockets.

Now try this questionnaire:-

(Score 1 point for every "Yes" answer)

(1) Have you reduced your trailing leads to a minimum?

(2) Are they neatly laid out so it is obvious which leads go where?

(3) Are you certain that the correct wires are connected to the correct L, N and E pins?

(4) Are you sure the use of multisockets is not overloading the circuit?

(5) Are you sure all your portable electric tools are correctly earthed?

(6) Are all your plugs fitted with fuses of the correct rating?

(7) Can you swear that you do not have a single frayed lead to any of your equipment or tools?

(8) If you saw a colleague receive an electric shock do you know exactly which switch to operate to render the circuit safe?

(9) If following (8) your colleague appears to be unconscious do you know what action to take?

(10) If following (8) the equipment is found to be on fire do you know where the nearest fire extinguisher suitable for use on electric equipment is located?

Now check your score:-

1-3 Make an advance booking with your undertaker or leave RSRS and take up employment in an insulator factory!

4-8 You are average but please pay attention to the points listed above - better to be safe than sorry.

9-10 Check your answers again. People as safe as you seldom exist in reality.

INSPECT YOUR CHRISTMAS TREES NOW - YOU MAY FIND THEY ARE IN SHOCKING CONDITION!

THE SHOCKING TRUTH ABOUT ELECTRICITY

(With acknowledgements to the Newsletter of the Royal Naval Amateur Radio Society)

You learn something new every day. For example, I was just reading that story of James Thurber's in which he recalls his grandmother's belief that electricity leaks out of an empty light socket if the switch has been left on. From this I gather - judging by the context, and the fact that Thurber was a humourist, that it doesn't.

I was never taught electricity at school, nor was it often a topic of dinner table conversation between my parents. But, what with reading Thurber here and there, and having to change a light bulb, or tune in a transistor radio, I have picked up a pretty sound knowledge of electrical matters. It's not comprehensive. God knows I still can't fully understand why you can't boil an egg on an electric guitar - but when I jot down a summary of what I have learnt I marvel that I have never been asked to write for the Electrical Journal. For instance:

1. Most electricity is manufactured in power stations, where it is fed into wires which are then wound around large drums.

2. Some electricity however, does not need to go along wires. That used in lightning for example, and in portable radios. This kind of electricity is not generated but is just lying about in the air loose.

3. Electricity makes a low humming noise. This noise may be pitched at different levels for use in doorbells, telephones and electric organs.

4. Electricity has to be earthed. That is to say, it has to be connected to the ground before it can function except in the case of aeroplanes which have separate arrangements.

Although electricity does not leak out of an empty light socket the light socket is nevertheless live if you happen to shove your finger in it when the switch is on. So if it is not leaking, what else is it doing?

Electricity is made up of two ingredients, negative and positive. One ingredient travels along a wire covered with red plastic, and the other along a wire covered in black plastic. When these two wires meet together they form electricity.

Electricity may be stored in batteries. Big batteries do not necessarily hold more electricity than small batteries. In big batteries the electricity is just shovelled in while in small batteries (transistors) it is packed flat. Incurious people are content to take all this for granted. They press a switch and the light comes on .... and that is all they know about the miracle in their homes. This has never been enough for me. I have to know how things work, and if I cannot find out from some technical handbook, then I combine such information as I already have with simple logic.

Thus it is easy to deduce that the light switch controls a small clamp which grips the wires very hard, so that the electricity cannot get through. When the switch is flicked on, the vice is relaxed and the electricity travels to the light bulb where a bit of wire, called the element, is left bare. Here for the first time we can actually see the electricity, in the form of a spark. This spark is enlarged many hundreds of times by the curved bulb, which is made of magnifying glass.

Why, is our next question, do these light bulbs have a limited life? As any schoolboy knows, heat converts oxygen in the light bulb to moisture. When all oxygen has been liquified in this manner it naturally quenches the spark.

I have not yet touched on fuse wire. It has always amazed me that an industry which is so enterprising in most respects - the invention of colour electricity for use in traffic lights and the harnessing of negative electricity for refrigeration are two examples that come to mind .... that they should still, 200 years after James Watt invented the electric kettle, be manufacturing fuse wire too thin. I pass on a hint for what it is worth - there is available at hardware stores a sturdy wire used mostly for making chicken runs and this is far more durable than the stuff sold by electricians (who must, I appreciate, make a living). By using chicken wire I now have a fuse box which, even when the spin drier burst into flames because of too much electricity having been fed into it - has for six months been as impregnable as the Bank of England.

But why have fuse wire at all? I completely understand that a fuse box is junction at which the wires leading from the power station join, or fuse with the wires belonging to the house, and these wires have got to be connected somehow, but what is wrong with a simple knot?

In some respects, I reiterate, my knowledge is imperfect. I have not yet explored the field of neon signs - how do they make the electricity move about? The pop-up toaster - how does it know when the toast is ready? What is the difference between electricity and electronics? Is Electronics just the smart word to use now? How can an English computer speak French, which requires a different voltage?

Logic would answer these questions too, and many more of a technical nature, but the light over my desk has just gone out. A valve blown somewhere I expect!!

Library Notice

Missing from Library, a book by Parradine and Rivett entitled "Statistical Methods for Technologists". Will whoever has the library copy please return it as others wish to use it. I understand a private copy belonging to Mr. E. Hammond has also been borrowed and he would like it back again please.

K. Shand

STAFF NEWS

Congratulations to:

Tim Winteringham and Victoria Seff on their marriage on 20th January at Stanley F.I.

Mr. P. A. Vaughan now P.S.O.

Welcome to:

Mrs M. C. Locke	H.S.O. (GSFC)
D. M. Ellis	S.C.S.
Mrs J. W. Willard	C.O.
R. W. Quennell	Cfn. I
G. E. Masters	S/S Lab.
Miss C. F. Lane	C.A.

Resignations

Dr. R. Wilson	D.C.S.O. (Culham)
P. D. Gavin	S.C.S.
Mrs. B. Woodason	C.O.

Other Changes

D. M. Kelley	S.O. from Gp.6 to Gp.4 in Div. IV
Mrs. H. Lennon	C.O. from Finance to Accounts
J. M. Woodroffe	H.S.O. returned from Falkland Is.

Station News

Eclipse observations from Concode 001:-

Hasty preparations are being made by SRC and University experimenters to observe the eclipse on 30 June 1973 from Concorde 001 while it is being flown down the path of the eclipse at an altitude of 60,000 feet and Mach 2 speed which is slightly slower than the speed at which the moon's shadow passes over the earth's surface. The duration of the eclipse is thus extended considerably and some 80 minutes of observation time will be obtained before fuel considerations terminate the flight.

The British experiments will be infra-red coronal studies under the direction of Dr. J.Beckman of Queen Mary College London and an atmospheric observation proposal by Aberdeen University under the direction of Dr. M. Gadsden. Mr Paxton visited Aerospatiale, Toulouse on 19 and 20 February for discussions on the installation of these experiments in the aircraft when mechanical and electrical compatibility was confirmed. Mr. Lewis will act as payload engineer and will supervise mounting, installation and integration of the UK equipment. The integration of all the experiments with Concorde 001 has been scheduled for the period 8-15 April, trial flights in May and final installation in late June. SRC project coordination and management is being undertaken by Dr. J. E. Hall of RSRS. ARD is contributing directly by engineering and interfacing the mounting for the experiment and various details under Mr. Paxton's direction. R.S.R.S. will be providing for other aspects of support to the project at Slough.

SPORTS AND SOCIAL CLUB NEWS

R.S.R.S. Amateur Radio Club - G3RRS

Poor propagation on the higher frequency bands during the winter months usually shifts the amateur population to lower frequencies such as 3.5 and 1.8 MHz. This seasonal shift is encouraged by annual contests and this year was no exception. Our entry in the world-wide contest at the end of November produced 484 contacts in 53 countries the frequency being 3.5 MHz and the mode of operation CW (morse) only. These contacts were made in a total operating period of 30 hours (maximum permitted is 36) the best in terms of distance was VK6CT near Perth in Western Australia.

The Radio Society of Great Britain held the annual "top-band" contest once again on 10-11th February and this encouraged many morse enthusiasts to operate for the relatively short contest period of five hours. During this time our

station produced 104 contacts throughout Britain, with a few in Czechoslovakia. Long distance contacts are an exception on this low frequency of 1.8 MHz. Although we thought that this was a fairly good score, it didn't match the Cambridge University Radio Club's total of 152 contacts in the same period. Better luck next time!

Enough said for the esoteric morse activities and on to the telephony side of things. Moving up to 3.5 MHz again, nighttime propagation has been exceptionally good in the last month, and a record distance for the club's logbook on this band was achieved by a chat with ZL4KE in Christchurch, New Zealand. By managing to stay awake until 2 or 3 am it was possible to have long contacts with a group of amateurs in the Caribbean area, Puerto Rico, Barbados, Jamaica, St. Lucia and a young lady in British Honduras relying on a petrol generator as her only means of power! Thanks to the generosity of Mr. D.John, some equipment for VHF operation is now available, and we hope to have it installed soon.

As usual, we are always ready to receive visitors to give a demonstration of amateur radio so please don't hesitate to contact D. R. Vizard, Hut 5, or L. Mitchell in Office Services.

D. R. Vizard

Bridge Club

The first match of 1973 resulted in a convincing victory over ICI by 107 International Match Points, a dramatic improvement after our series of defeats in recent matches.

The next club evening will be on Thursday 8 March. New players are always welcome at these club evenings, but please sign the list on the Sports and Social Club notice board a few days beforehand.

Tony Gibson

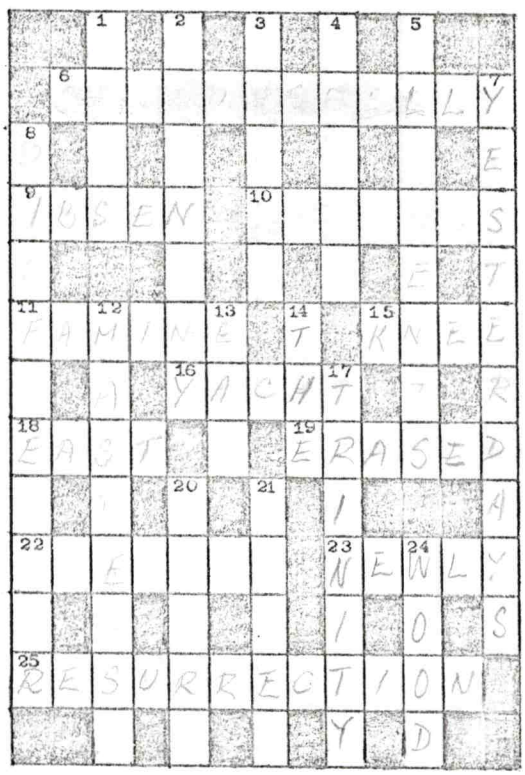
Football Club

Due to a mixture of injuries and pure bad luck, the football club has had a series of poor results during February:

WINDSOR GARAGE	HOME	2-8	G. BALDWIN 2
KENNEDY RANGERS	HOME	3-4	A.SMITH, J.BAINS, N.HILLSDON
SUN CELTIC	AWAY	0-8	
COOPER HILL SPORTS RES.	AWAY	1-6	T.ADAMS

D. Wright

CROSSWORD



CLUES ACROSS

6. Certainly not rashly! (12)
9. Norwegian Dramatist (5)
10. Fertile (7)
11. Scarcity (6)
15. Patella? (4)
16. Ted's Cloud (5)
18. Not West (4)
19. Effaced (6)
22. ------- Africa (7)
23. Recently (5)
25. Revival (12)

CLUES DOWN

1. Hundreds, thousands, millions (4)
2. Gravity (7)
3. Slime (5)
4. Prize (5)
5. Shocks (8)
7. All Our ---------- (10)
8. What this crossword is (10)
12. Profound (8)
13. Get a head (3)
14. Article? (3)
17. Holy Three (7)
20. Seen crossing the road (5)
21. Saturate (5)
24. Can't be seen for the trees (4)

GEORGIE THE BE(A.)ST

LETTER TO THE OUTSTATIONS

Dear Colleagues

The geophysics trade has among its canons a sufficiency of sudden commencements. No doubt compared with the calling of explosives expert, anarchist etc., ours is a tranquil enough way of gaining a crust; a Sudden Ionospheric Disturbance has less dramatic impact on the worker than the premature ignition of an infernal machine. None the less the gap between these disciplines appeared ominously narrow, this very morning, with a Sudden Enhancement of Telephones.

The telephone, a useful if sometimes annoying device, is noted for little about it that is sudden, save for breaking the lines of communication at moments of climax. It is most certainly not famous for its speed of installation. Imagine, as they say, our surprise when, arriving bright and brisk to a new week's research, we found a flowering of red telephones hanging from walls in spurs and corridors.

Perhaps it's due to the mild winter and they'll drop off at the first nip of frost, the red hand-sets have a touch of the hot-house about them. They also, as implied earlier, have more than a touch of the sinister.

I have not dared speak into one, my extreme shyness would render me tongue-tied if the earpiece answered 'Nixon' or 'Chairman Mao here, please sit down'. Supposing some fool screams 'go' down the thing and a pre-emptive strike is launched against the enemies of democracy; they might pre-pre-empt us, and there we are, back to the runner and wax tablet. Only faith in a wise management gives peace of mind - up to a point, for what if they are too wise? Maybe after years of telephonic frustration my masters have run up a special line for me alone. It is self-concern, not self-conceit, that makes me worry, for when a pause is needed for creative thought, though he hide him in the uttermost ends of the Station they will find,

Yours sincerely,

The Editor

List of Reprints - February 1973

M. R. Bowman
L. Thomas

Sunrise changes in concentrations of minor neutral constituents in the mesosphere. J.A.T.P. 1973, Vol.35, 347-352

J. E. Hall

Lower ionosphere electron densities from rocket measurements employing L.F. radio propagation and D.C. Probe Techniques. Planet Space Sci. 1973 Vol. 21, 119-131.

Internal Memoranda

Nil