

NEWSLETTER

No. 133

June 1972

NEW D.C.S.O. POST



We have recently heard, with great pleasure, of the appointment of Mr. Robert Dalziel to the newly-created D.C.S.O. post at R.S.R.S.

Mr. Dalziel began his career as a mathematician, graduating with first-class honours in mathematics and natural philosophy at the University of Glasgow in 1941. As with many others at that time, the second World War had a considerable effect upon the fashioning of his career. He joined the Signals Research and Development Establishment and found himself engaged on problems far removed from purely theoretical considerations. These were such tasks as the application of electronic techniques to defence matters and, later, to military communications systems of a highly specialized type.

In 1961 he joined R.S.R.S. being appointed to a S.P.S.O. post and has since then been leader of a division whose work includes a wide range of rocket and satellite borne investigations. This division is now known as Space Science (A) and Space Management Services. He was appointed project scientist for the Ariel IV satellite experiments.

We offer congratulations to Mr. Dalziel on his promotion and feel sure that his wide experience in space matters, coupled with his calm judgement and sense of humour, will prove a valuable asset to himself in his future tasks and to the progress of the Station in general.

INDIVIDUAL MERIT PROMOTION



Staff were very pleased to learn of the promotion of Dr. Henry Rishbeth to S.P.S.O. on individual merit.

Dr. Rishbeth was born in 1931 and comes of a family having many associations with Cambridge; after attending the Perse school and serving with the R.A.F. he entered Christ's College in 1951. A period of post-graduate research at the Cavendish under Mr. Ratcliffe was followed by radio-astronomical studies at the Radiophysics Laboratory, Sydney, after which he returned to Cambridge.

He first came to Ditton Park in 1960 on his appointment as a Senior Research Fellow. During 1962-64 he held a consultant post at the Central Radio Propagation Laboratory, Boulder, U.S.A. and returned to join the Staff of R.S.R.S. in 1965. In 1971 his work gained him the Sc.D. of the University of Cambridge.

As an expert in the theory of the ionospheric F region, Dr. Rishbeth has an international reputation; he is the author of numerous papers on the subject and co-author, with Professor Owen Garriott, of the book 'Introduction to Ionospheric Physics'.

All of us who know him offer our congratulations to one who has proved himself not only a skilled physicist but also a most agreeable colleague.

THE UK-5 SATELLITE CONTROL CENTRE

The UK-5 satellite will be launched in October 1972. Its purpose will be to measure the intensity of cosmic X-ray sources. It will carry one experiment from the United States, and five from the United Kingdom provided by Imperial College, London; the University of Leicester; and the Mullard Space Science Laboratory (University College, London). These are nearly all "second generation" experiments in that they are designed to study in detail sources known to exist, rather than to search for new sources. Experiments of this kind can be done at present only by using sounding rockets which allow exposures of the order of 200 seconds. In contrast UK-5 will allow exposures of a day or more to be used, enabling the emission of sources to be measured over a much wider range of X-ray wavelength.

The positions of sources will be measured more accurately, to help in identifying the optical stars to which they correspond, and in some cases information on size and structure will be obtained. One experiment will maintain a continuous sky survey to look for the occurrence of "nova-like" X-ray sources similar to some which have previously been observed. When these occur, the other experiments will be pointed towards the new source to study it in detail.

A significant difference between UK-5 and UHURU, the first X-ray satellite, is that UK-5 can be "pointed" in different directions in order to make specific observations on discrete sources. This is also different from the previous satellites in the U.K. series which have been operated in a more passive data gathering mode. Moreover, the UK-5 experiments are designed to be very flexible and they will require a considerable number of ground commands to set them up for an observation.

The UK-5 control centre at R.S.R.S. is being set up, therefore to allow satellite controllers to remain in close contact with the satellite for a period of several hours each day. This necessitates the use of a world-wide data transmission network, both for the reception of telemetry data to monitor the operation of the satellite, and for the transmission of commands to control it.

The control centre, which will be situated in Spur C main laboratory, requires the extensive use of computers and data links. The control centre itself will contain 3 PDP8 computers. One of these will be used to service the satellite, that is to say it will collect data from the satellite and send commands to the satellite. This computer will also be linked to the 1904A computer so that the data can be transmitted to the 1904A in near-real-time and calculations such as attitude reconstitution, which require the use of a large computer, can be performed in a matter of minutes. The results of these calculations can then be transmitted back to the control centre together with processed data.

A second PDP8 computer will be used to service the experimenters, this means that as soon as the control centre has processed the data from a real-time pass, this computer will be used to transmit processed data to the experimenters. The third PDP8 computer will be used as a back up machine for either of the first two.

In a typical day, the control centre will be in contact with the satellite via the data receiving station at Quito for 4 complete passes and so 4 times each day experimenters should receive data which is less than an hour old. This will enable them to check that their experiments are functioning correctly and will enable the control centre to ensure that the satellite is pointing in the right direction. It will also mean that should the satellite discover anything unusual such as a completely new X-ray source, the experimenters will be able to instruct the satellite controllers to depart from their normal plan of action, which consists of a gradual scan of known X-ray sources, and to keep the satellite pointing at the new source.

In addition to handling the real time passes the control centre must also handle all the rest of the data that will be received at Quito from the satellite. This will be transmitted to the Goddard Space Flight Centre where it will be recorded on magnetic tape, and once every 24 hours a complete day's data will be transmitted to R.S.R.S. This will be processed in a similar way to the real-time data, and then transmitted to the experimenters: thus the experimenters should have all their data within 48 hours of its leaving the satellite.

Clearly for the control centre to function efficiently there has to be a great deal of preliminary work, and much of this work, such as the linking of

computers, is quite new to R.S.R.S. The key people involved in their project are the UK-5 project manager Mr. Smith and his deputy Mr. Vaughan, who have been working at R.S.R.S. since the S.R.M.U. joined the Station in February this year; Professor Willmore of the Mullard Space Science Laboratories who is the project scientist; and Dr. Doyle and Mr. Rogers of R.S.R.S. who are responsible for setting up the control centre. Dr. Doyle is in charge of a team of computer programmers who are writing all the software for the control centre. In this work she gets a certain amount of help from Marconi Space Defence System who are building the satellite, but the lion's (kangaroo's?) share of the work is being done by R.S.R.S.

The software covers a very wide field. Firstly a large amount of systems programming for the PDP8 computers is required; this mainly consists of modification to the supervisor program which handles the satellite, software for data links and a macro language for use in the control centre.

A knowledge of operational research is required when dealing with the problem of optimising (and safeguarding) the experimenters' observing programme. A good mathematical knowledge is required to handle problems associated with orbit and attitude determination, and finally several large data handling routines are required and here the experience we have gained on UK4 data analysis will be very useful. Provision of the software began last autumn and already a great deal of progress has been made.

Mr. Rogers has the unenviable task of running the control centre after launch. His job at the moment is to get a good understanding of the way the satellite works and to obtain a thorough knowledge of the control centre hardware. He works very closely with Dr. Doyle, as the final hardware configuration decided upon for the control centre can affect the way some of the software is written. He is also dealing with the alterations which are required to turn Spur C main laboratory into the UK-5 Satellite Control Centre.

This is an exciting project containing a large amount of interesting new work, much of which is going to be of great value to us throughout the 1970's. When the Control Centre is operational it will mark the first occasion that this country has attempted to steer a satellite in such a sophisticated manner and to process data in such an automated fashion. The launch of UK-5 will be a very important day for R.S.R.S.

B. R. Martin

SPORTS DAY 1972

Another weather oriented day at Chiswick kept almost all the spectators away, which was a great shame as in the periods when the sun graced us it was very pleasant.

We fielded 45 staff competitors plus 3 associate members which is a goodly number, these were aided and applauded by 8 spectators. Our contribution to the S.R.C. was 11 helpers, of whom the lunch ladies did a thankless and onerous task. Due to the lack of spectators 50 lunches were left and these had been paid for so an all out sales campaign was launched during the afternoon but this sizzled out with 9 still unsold, so we raffled?* these at the dance and collected £3.54 a slight profit on the original 35p each.

Last but by no means least the important first-aiders, who I believe had a few customers during the afternoon who were put on the road to repair, pity they did not stay until the end of the cricket final to help a poor man who had fallen rather awkwardly (Fred Hemmings!).

This gave us a final count of 69 participants, but this is not the true total, back at Slough their colleagues were backing them up workwise. I think it significant to note the number of administration or services personnel involved which was about 33% of R.S.R.S. turnout, and it is mainly in this field that the work has to be backed-up or made up subsequently.

Let us proceed to an organisational problem, lunches. S.R.C. Sports Committee would like an alternative to set lunches, as the time to deal with these is always limited, requiring tremendous effort for a short time, which the caterers are unable to budget for, in space and staff. I would therefore like to put up some constructive ideas to them and would be obliged if you would fill in the enclosed slip and return.

I have kept my article off the sports and left that to the teams themselves, as although I took 'photos of each event I did not have time to get involved in spectating, that is except two events, the bowls held me for one set (or whatever they call a game) as I could not imagine what could be done in the situation, the jack (small white ball) neatly shielded by a wood (see photos) but the end was a complete reversal with what I would call "in off" with the last wood bowled. The other game I could have spent more time at was chess, which is another slow! (10 secs. a move) gripping "edge of the seat" affair. I recommend these two to spectators next year, as a diversion to tennis and netball, which are the most watched.

My congratulations to the winners, especially our new mixed doubles pair, but my admiration goes to the competitors who go to Chiswick with no hope of winning but without whom there would be no competitions or winners, to these I hope they achieved a degree of personal satisfaction from some good play, and will attend next year, taking with them some new competitors who will join in the spirit of the day.

Below are listed the names of our participants who made the day work:-

COMPETITORS

P. H. G. Dickinson	Dr. and Mrs. Horner	R. Berry
D. Eccles	C. Whitlock	M. Hope
E. Bramley	W. Harrington	D. Wright
B. R. Martin	P. A. Smith	T. Bevan
P. Davies	J. Dudeney	V. Brown
E. Dunford	P. Muzlish	N. Bence
I. Greenan	J. Halley	A. Fordham
A. Hardie	M. Huggins	A. Zavody
D. King	A. Faulkner	A. Roberts
M. Garside	P. Martin	P. Gardner
P. Reader	J. Cathrew	J. Moore
W. A. Brown	G. R. Thomas	R. W. Smith
C. Clarke	T. Paterson	A. Chipperfield
G. Naharnowicz	J. Kitt	A. Buck
A. C. Gordon-Smith	W. Hayes	P. Eggett
D. A. Bryant	T. S. Bains	

HELPERS

P. Scammell	M. Clarke
D. Baldwin	B. Woodason
E. Wright	N. Faulkner
L. Kennedy	P. Hicks (Photographer)
E. Scammell	J. Crawford
M. Parissien	

SPECTATORS

J. Saxton	R. Walls
A. Street	J. M. Yilmaz
D. Robertson	V. A. W. Harrison
Mrs. Gordon-Smith	J. Ryder

FIRST AIDERS

E. A. Thomas	F. Bennett
M. Guest (Auxilliary Ambulance)	

P. A. Hicks

Chairman RSRS Sports & Social Club

TENNIS

The following people took part in the Tennis Tournament this year:-

Mens Doubles

Games

A. C. Gordon-Smith & A. C. Roberts	Won 42 out of 42
D. A. Bryant & P. Gardner	Won 33 out of 42

Mixed Doubles

A {	J. Moore & M. Huggins	Won 42 out of 42
	C. Whitlock & A. Faulkner	Won 35 out of 42
B {	F. Horner & E. Horner	Won 35 out of 36
	R. W. Smith & P. Martin	Won 36 out of 36

The Tournament is in the American style with each pair playing every other pair.

In the Mens Doubles Gus Gordon-Smith and Arthur Roberts were again in excellent form and regained their title by winning all their sets. They have yet to lose a set at Chiswick. Duncan Bryant and Paul Gardner were fifth with 33 games to their credit, only 4 games behind the runners up.

In the Mixed Doubles the pairs are divided into two sections, with two R.S.R.S. pairs in each section. Jack Moore and Marie Huggins headed section one without losing a set and likewise Richard Smith and Pat Martin in section two. The Final between the two R.S.R.S. pairs looked like being an anti-climax when Jack and Marie built up a commanding lead of 5-0. However Richard and Pat rallied to 5-3 and saved eight match points before going down 6-3. Dr. and Mrs. Horner lost only one set (6-5) and Charles Whitlock and Anne Faulkner finished third in their section.

In previous years we have always brought back a cup but this year we achieved the double thanks to some excellent play by all the teams.

Wendy Harrington

CRICKET

R.S.R.S. Versus London Office

E. Bramley	- 4	G. Thomas	- 8
B. Martin	- 82 Not Out	E. Dunford	- 2
T. Paterson	- 20	B. Hayes	
P. Davies	- 3	P. Dickinson	
J. Kitt	- 7	J. Cathrew	
		D. Eccles	

London Office won the toss, elected to bat first, and started in fine style by scoring 31 runs off the first three overs. The high scoring continued and a final score of 137 was amassed thanks mainly to K. Latham (58) and M. Jefferies (41).

Not disheartened the R.S.R.S. batsmen set about their task with a will and with 81 runs off the first ten overs looked set for a comfortable victory. Alas the assault could not be sustained, and despite a great knock of 82 by B. Martin, R.S.R.S. finished one run short on 136.

However, some consolation was forthcoming when a combined R.S.R.S. and Daresbury side beat the ATLAS team by 90 runs to 73.

John Kitt

TABLE TENNIS

27 players altogether played 1st round, 2nd round, Q. Final, S. Final and Final matches.

Alan Buck reached the Semi Finals

Phil Muzlish " " Quarter Finals

John Dudeney " " 2nd round

P. Smith, A. Chipperfield and P. Eggett were knocked out in the 1st round.

It was a knock out tournament and A. Chilvers from Rutherford won it. On a points basis laid down by the organiser of the event R.G.O. and Rutherford were the most successful teams.

Peter Smith

BOWLS

C. Clarke and E. F. Bence playing in the pairs competition performed creditably against some good opposition, culminating in a very close finish with the ultimate winners Daresbury.

It is hoped to enter a Rink as well as Pairs in next years competitions.

E. F. Bence

FOOTBALL

<u>Team A</u>	<u>Scores</u>	(Ours mentioned first)
R. J. Berry	1.	0-1
M. Hope	2.	3-6
P. Reader	3.	2-0
D. King		
J. Bains		
I. Greenan		

<u>Team B</u>	<u>Scores</u> (Our mentioned first)
D. Wright	1. 0-6
A. Hardie	2. 2-4
T. Bevan	3. 0-3
W. Brown	4. 0-5
M. Garside	5. 0-5
V. Brown	6. 2-5

R. J. Berry

CHESS

The station was well represented at the chess tournament with 4 players. Dr. Bramley has won the cup again and all the other players (Alan Fordham, George Naharnowicz and myself) came very near to qualifying for the final.

The competition was run on a different basis from last year; no chess clocks were used but a device which emitted a semi ultrasonic bleep every 10 seconds. The player whose turn it was to move had to complete it by that time. There was also a time limit on all games except those in the final; if the game was not finished in 15 minutes the result was declared a draw. The latter rule was much criticised later as adjudication would have given a win to one player quite unambiguously in most of the so called "drawn" games.

It has been suggested that a team as well as an individual championship may be held next year.

Albin Zavody

CORRESPONDENCE

Dear Editor

Leonardo will no doubt be pleased to learn that as a result of his letter published in the last edition of the Newsletter the entrance hall is to be entirely redecorated more in keeping with the life and times of our great Empire.

The floor is to be recovered in chocolate brown inlaid linoleum (M.O.W. type circa 1930) and liberally sprinkled with empty milk bottles (unwashed). The walls are to be tastefully repainted in sober battleship grey and decorated with remnants of posters such as "Your country needs YOU" - "That's Shell - That was!" - Where's George? - Gone to Lyonch" - "This way to the air raid shelter" etc; etc; The red strip on the ceiling is to be picked out in gold lettering with the words "Britannia Rules the Long Waves". The mural will be repainted to depict a scene from the relief of Ladysmith.

In keeping with the policy prevailing at that time the entrance will be marked "Director Only" thus avoiding the necessity of staff having to pass through the hall and rendering all criticism totally unnecessary.

NIL BIAS

P.S. Leonardo da Blimp?? - Just what did our army officers get up to during the Italian campaign?

Dear Leonardo

I am so glad you had the courage to write so forcibly to publicise your objection to the way the entrance hall has been redecorated because I too share your feelings. It is quite beyond my comprehension why such soothing colours of chocolate brown, pale cream and olive green paint were not used to complement some new furniture of windsor chairs around a folding table on some good honest grey hair cord carpet of the types which have graced our government offices for centuries?

Still you can't please everybody can you?

With kind regards

Ima Frump

Name and Address supplied

Dear Editor

In brief reply to Signor da Blimp and his vicious attack on the 'Man from the Ministry' who designed the imaginative new decor in the entrance hall, I would just like to say that I find it rather gay, warm and exciting. In fact, a welcome change from the dull drab colours which can still be seen staring balefully out at us from the walls and floors of our corridors. Can he really prefer the cold, austere grey-blues, pale sickly yellows and greens to the warmth that now exists in the hall, and which will bring us sunshine even in cold December? Who is da Blimp? What makes him tick? I am on the lookout for a thin man with a very stiff upper lip!

Yours unashamedly

Margo Clarke

STAFF NEWS

Congratulations to:

Elizabeth Zbikowska and Florian Tkaczyk on their marriage on Saturday 24th June at St. Ethelberts Church, Slough.

Mike Trower on his engagement to Lucy Verner-Jeffreys of Colnbrook

Wendy Harrington on her engagement to Kerry Miller of Langley on June 28th.

Dr. E. Dunford	now	Principal Scientific Officer
Dr. G. Bennett	"	Senior Scientific Officer
Mr. R. J. B. Champion	"	Senior Scientific Officer
Dr. W. J. K. White	"	Senior Scientific Officer
Mr. A. J. Chipperfield	"	Higher Scientific Officer
Mr. G. Douglas	"	Higher Scientific Officer
Mr. Z. Warhaft	"	Higher Scientific Officer
Mr. G. M. Webb	"	Higher Scientific Officer
Mr. P. J. N. Bannister	"	Scientific Officer

Welcome to:

T. P. M. Paterson	H. Executive Officer (From London Office)
Miss S. E. Reed	A.S.O.
M. J. Corry	S.C.S.
M. F. Holmes	S.C.S.

Resignations

R. W. Tucker	S. Exec. Officer (Transferred to London Office L.D.S.)
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WHICH?

The Consumers' Association Which? magazine bulk subscription is due for renewal after the July issue.

A year's subscription to the monthly Which? is again available at the discount price of £1.05. Money Which?. Motoring Which?, and Handyman Which? are published quarterly, and may be ordered with the monthly Which?. The year's subscription for each "quarterly Which? is also £1.05.

Please may I have subscriptions, and orders for any other C.A. publications by Thursday 13th July (Cheques should be made payable to:- R.S.R.S. Sports and Social Club).

If anyone would like further details of the various Which? magazines, I have got a list of some of the reports which are planned for future issues.

Mike James, Hut 5

SPORTS AND SOCIAL CLUB NEWS

Committee Members

Chairman	P. A. Hicks
Vice Chairman	J. E. Allnutt
Secretary	D. Baldwin
Minute Secretary	C. A. Spears
Treasurer	R. Walls
Bar Manager	J. Halley
Bar Steward	F. W. Salter
" "	J. A. Crawford
" "	U. Yilmaz
	T. J. Bevan
	Y. Dias
	E. W. Scammell

Cricket Results

Wednesday 17th May National Westminster Bank Away
R.S.R.S. all out 50
B. Martin 21
Westminster Bank 40 for 8 in 20 overs
T. Paterson 6-14
R.S.R.S. Won

Wednesday 24th May Phoenix XI Home
Phoenix 91 for 3 in 15 overs
Latham 48
Ballard 34
R.S.R.S. 43 all out
R.S.R.S. Lost.

Tuesday 13th June London Office Home
London Office 76 in 20 overs
R.S.R.S. 74 all out
B. Martin 23
T. Paterson 23 not out
R.S.R.S. Lost

Wednesday 21st June

Wilkinson Sword

Home

R.S.R.S. 65 in 20 overs

E. Bramley 17

J. Kitt 17

Wilkinson Sword 37 all out

T. Paterson 5-12

R.S.R.S. Won.

John Cathrew

LETTER TO THE OUTSTATIONS

Dear Colleagues,

Round and about the Station one often comes across objects disposed in such a fashion as to excite the imagination. Some of these (Class I) are more exciting than others (Class II). For the first class the conjunction of girls, sports day and Peter Hicks' camera outstrips by far my halting prose, so my text this month touches upon an example of the second class.

We do not quite run to sermons in stones here; Ditton Park is no Arden, but conversation pieces in concrete have recently appeared in the shape of a number of cylinders of the stuff, buried in the ground until only a few inches protrude. These things lie along part of the periphery of a circle of about twelve feet radius, just to the N.E. of hut 2, and there is about them a whiff of pre-history.

Perhaps they mark the site of a mini wood-henge, a proposition given some credence by the sight of certain members of staff gazing at them in a knowing way, then going through sundry alignment rituals. This seemed in keeping with that school of thought which maintains that the bronze age spent most of its time in a frenzy of analogue computer construction. On the other hand, traditionalists may take heart; a youth was seen leading a girl in that direction of an evening, so perhaps the old ways are still being honoured.

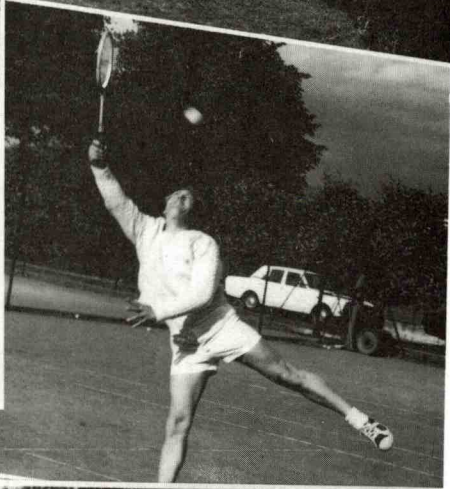
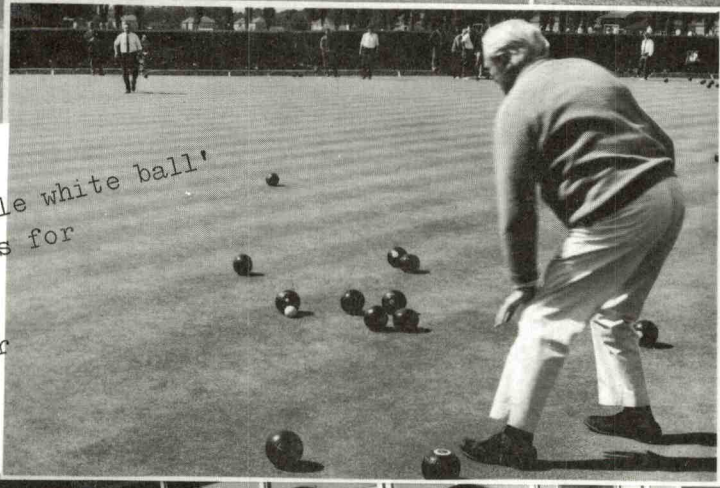
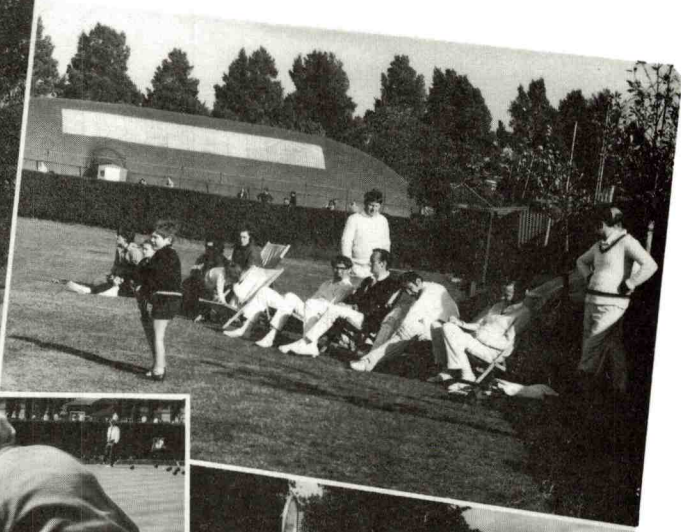
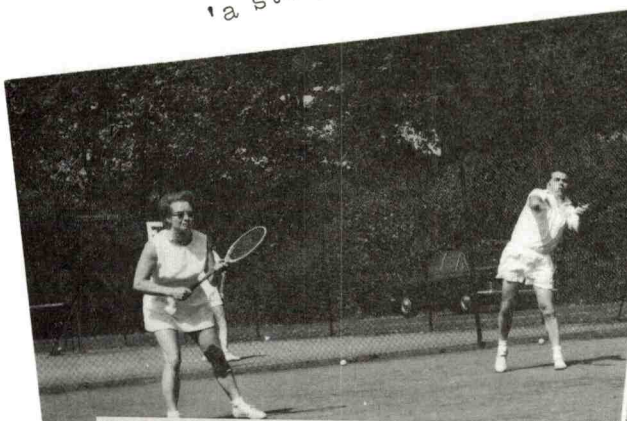
Another possibility suggests itself to the amateur of industrial archaeology. The layout looks most remarkable like that used by Trevithick in his first railway demonstration. It's good to work over old ideas in the light of modern knowledge, but surely this is pushing it a bit? What then is it? Rumour says a small steerable aerial and it may well be, though any other printable suggestions which may occur to readers would be of interest. They provide at once fuel for the newsletter and aid and comfort to

Yours sincerely

The Editor

The Horners' in action
'a study in concentration'

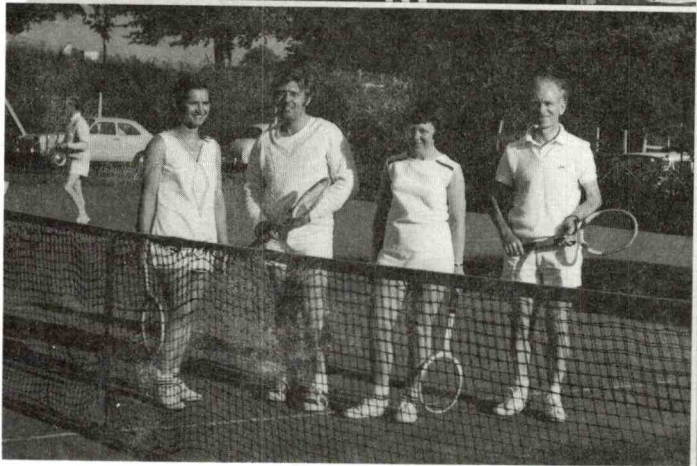
High speed R.S.R.S. cricket
on a cold afternoon



'That little white ball'
Nick waits for
Cecil's
inswinger

R.S.R.S.
Eros
not really
a winner's
style.

Gus and
Arthur,
again.



Group champions

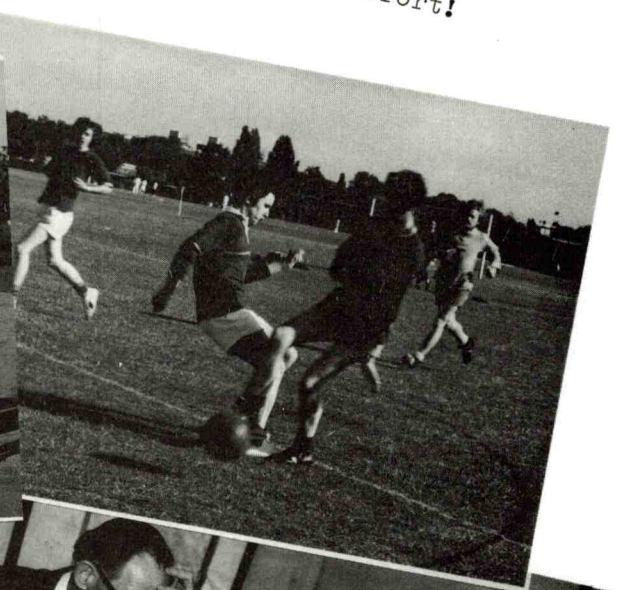
Marie and Jack Pat Richard
Group A Group B

Much better style!
Pat showing runner-up form.

Futherford netball champions



R.S.R.S. football effort!



Well held R.G.O.



Champion Eric retains title

R.G.O.'s high springer

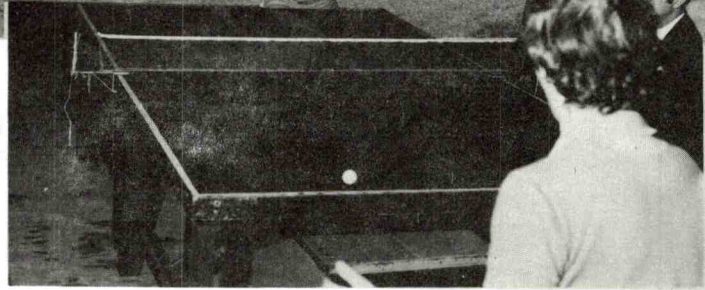
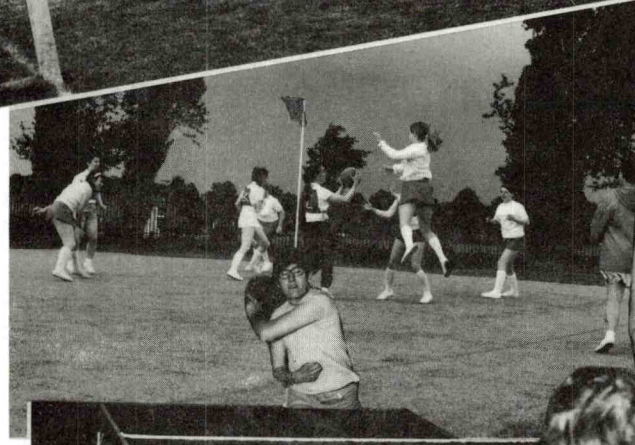


Table tennis smash by John.



'Les Girls'

evening entertainment

JUNE 1972

List of Reprints

R. Ruster and J. R. Dudeney

The importance of the non-linear term in the
equation of motion of the neutral atmosphere.
J.A.T.P. 1972. Vol. 34. 1075-1083

INTERNAL MEMORANDA

Nil

Reason you do not purchase a set meal on Sports Day

- a) because of insufficient time
- b) inconvenient times served
- c) waiting time too long
- d) do not eat when competing
- e) would prefer after events
- f) prefer canteen type lunch
(e.g. pie, beans, mash chips etc.)
- g) prefer snack (pasty, pie, soup)
- h) not good value for money
- i) not advertised beforehand
- j) any other reason

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Please tick relevant boxes and return to D. Baldwin