



# APPLETON LABORATORY NEWSLETTER

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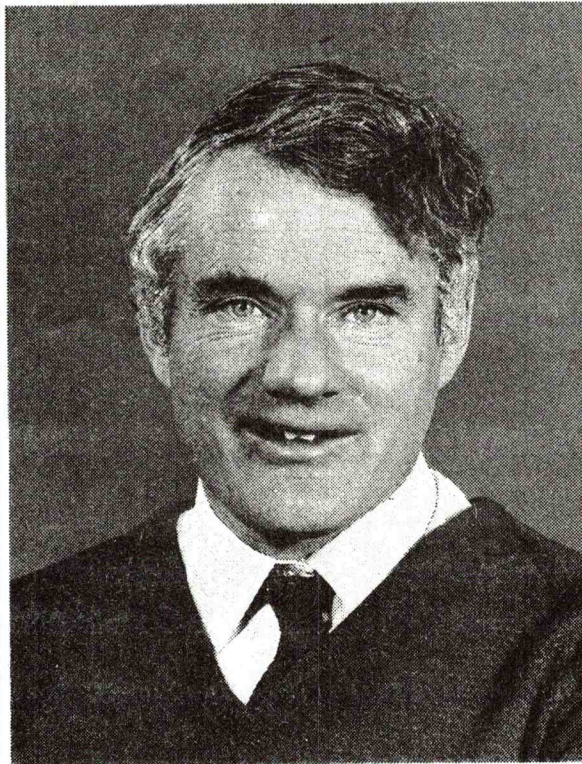
In taking over my responsibilities as Director of the Laboratory, I am conscious that my predecessors have set a high standard which it is my duty to maintain. I welcome the appointment of Dr. Rishbeth as Deputy Director, which will be generally regarded as an indication of the importance attached to our research programme.

Of the future, there is little to add to what has already been said in previous newsletters, except to express my confidence that the Laboratory will continue to have an important job to do, and that the staff are capable of doing it.

*J. Loran*

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Dr. Henry Rishbeth



We offer our sincere congratulations to Dr. Rishbeth on his appointment to be Deputy Director of the Laboratory.

Born in 1931, he 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, Australia, 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. In 1972 he was promoted on Individual Merit to S.P.S.O.

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'. His current work includes a major contribution to the development of the European Incoherent Scatter Facility (EISCAT).

Dr. Lance Thomas



Staff were very pleased to learn of the promotion of Dr. Lance Thomas to S.P.S.O. (Individual Merit).

Dr. Thomas graduated in Physics at the University College of Wales, at Swansea in 1950 and continued research there, obtaining a Ph.D. for his Ionospheric studies in 1953. He joined Ditton Park in 1959 and was soon able to advance his work further, making valuable contributions to a number of investigations in atmospheric and ionospheric physics. In 1970 he took over Leadership of the Laser group, which benefitted greatly from his knowledge of mesospheric and stratospheric theory.

He was awarded a D.Sc. in 1972 and is now a leading authority on the theory of the middle atmosphere, being much in demand to advise on the use of lasers in atmospheric research, e.g. from Spacelab.

We offer our congratulations to a popular and skilful colleague.

THE FLEET LIT-UP

One advantage of being in a ship-owning Research Council is that you can join in a review of the Fleet, once or twice a lifetime. NERC staff are in this fortunate position, and through our close association with BAS and the good offices of Roy Piggott, late of the Appleton Laboratory, I was allowed to participate, along with the NERC Councillors, Establishment Directors and senior staff and an assortment of administrators and University representatives, some 45 in all, and as fine a body of men as ever embarked on a well-tethered and stationary ship.

The wet part of the exercise started from the Hamble River, in Southampton Water, where we embarked in small and far from stationary boats to be ferried five miles to the Bransfield, the pride and joy of the British Antarctic Survey. This had been in position for a day or so, at the western end of the line and adjacent to the massive BP oil tanker which was to be the turning point for Britannia. Twenty hours occupied in eating, drinking, sleeping and a tour of the ship brought us to the starting time for the review and some much-needed rehearsal of our humble part in the proceedings. Considerable research led to a satisfactory disposition of scientists in three rows on the after-deck. (The crew were somewhere up at the sharp end, out of sight.) Then, after a practice cheer in accordance with Queen's Regulations, we awaited the arrival of Her Majesty. It was explained that cameras and binoculars were not to be visible in her presence, but that we were allowed to take a photograph of her after she had disappeared.

Then there was Britannia with an escort of Trinity House and naval vessels and a flotilla of small boats in her wake, where I am sure they should not have been. One or two were headed off by control boats but these could make little impression on the vast armada. Britannia passed beyond the tanker, did a smart U-turn and we all adjusted our ties and stood to attention in anticipation of a close regal inspection. The reality was somewhat different. Those with good eyesight could just discern the Royal Group and could imagine the person in the white coat was Her Majesty because we had seen her earlier on T.V. We cheered as instructed but it is doubtful if our cheers travelled sufficiently far up-wind to reach Britannia. Still, we had done our duty and could return to the lounge and the T.V. to see what really was going on. It was all good fun, NERC hospitality was first-rate, and I discovered what a lot of marine biologists there are competing with SRC for research funds.

Two footnotes : (1) Anyone looking for a research project can investigate why a television set works at all, even badly, on a small loop aerial inside a steel ship, and why the worst aerial position seemed to be near the porthole.

(2) Our friend Sir Granville Beynon, with whom I shared a cabin, was so impressed with the Bransfield that he is planning to visit the Antarctic in her, whether from scientific or gastronomic interest he did not say.

F. Horner

A REVIEW OF THE JUBILEE FLEET REVIEW FROM NEAR THE WATER-LINE

In a small boat we must have had almost as good a view of the review as any. Nobody can have seen all of it, but we saw most of it. As we motored in the sunshine against a light head wind from Chichester Harbour to Spithead on Monday 27 June the view was extraordinary. Usually we see a wide expanse of water, but this morning the whole area seemed like a huge naval port, packed tight with ships. Then as we passed between No Man's Land Fort and Horse Sand Fort, which form the gateway of the old anti submarine barricade at the seaward end of Spithead, we looked along several vast lines of ships stretching out of view.\*

First we came to the Navy's last carrier, the "Ark Royal", the flag ship of the review, attended by a small brown and black paddle steamer, the "Faithful", looking like a pekinese outside a block of flats. Next we came to a converted carrier, the "Hermes", similarly attended by the "Favourite". To look up at these towering ships from near the water-line gave us a very different view of their magnificence than the gentlemen of the press were to have the following day from deck level. Then we moved on down the lines of some 110 other ships of the Royal Navy and Royal Fleet Auxiliary, as well as naval ships from many other countries, merchant marine ships, dockyard snips and yachts in great variety. Being there the morning before the review, we saw the rehearsals and preparations before the dress rehearsal, as we threaded our way between carriers and cruisers, destroyers and frigates, submarines, high speed launches and patrol boats, minesweepers, survey vessels and all the various assortment of the Auxiliary and MOD vessels. We saw the final many painting jobs, including a man slung on a bosun's chair painting the anchor chain to one link above the water-line, the final rehearsals of three cheers for the Queen, with a rolling row of white hats moving in unison at the densely manned rails, the Indian turbaned officers at attention whilst their ship's band went through the national anthem, the repeated "dressing" of men to equalise their spacing along the miles of decks, .....

And so many miles of international code flags on the ships dressed overall! We knew the work involved, having made a full set of forty the previous week. They are flown in a recommended order, in which no message is given, and the uniform is impressive seen on a number of yachts of the same size. At the other extreme, on the 277,000 ton BP tanker appropriately named "British Respect" anchored at the end of the line, the code flags were repeated so many times that the strict sequence became blurred in a festive spray of colour.

Having weaved our way through the fleet the seven miles almost to Cowes, taking many photographs in the sunshine, we returned under sail to anchor off Portsmouth, near the centre of things. During this part of the trip we saw the rehearsal fly past of large numbers of helicopters in various formations, and finally a flight of high-speed aircraft forming the letters ER and the shape of an anchor.

After dinner, and sufficient spirits to keep the cold out without risking the navigation, we waited for dusk with the radio on for the ten o'clock news. On the last pip of the time signal the fleet lit up in unison. The sight was really most impressive. Like an old fashioned peepsnow, but miles long. The submarines had just their decks and conning towers outlined, the small ships had only a line of lights from bow to masthead to stern, but many of the big ships were fully floodlit. Their battleship grey became white against the

\* A chart showing ships locations during the Review may be seen in the Library.

night. Off we went again, motoring along the line of ships. As in the morning (before the whiskey) one's senses became dulled to the seemingly endless number of highly impressive ships, this time each lit as for a theatre. Then as uniformly as the lights had come on, so at midnight they went off, just as we were passing the merchant vessels at the end of the lines to secure for the night in Cowes.

The morning of the review was colder, grey and damp, but the following wind made for an easy sail towards Lee-on-Solent where we were to meet the 36 other boats flying the Civil Service Sailing Association burgee. En route we passed close to the enormous broad rounded bow of the tanker "British Respect", past the magnificently raked royal blue bow of a private yacht, the orange knobby bow of the Post Office cable ship "Iris", and the bright red hook nose ice breaking bow of the British Antarctic Survey ship "Bransfield", registered in Stanley. We didn't know at that time that the new Director was to be aboard that day, getting an upper deck view of the review.

At midday we found very few CSSA boats, and so we moved on to Portsmouth through intermittent rain showers to get a better view. There was a fair number of yachts at anchor, but not nearly as many as expected. Also the beach was well lined with people, but again only about five per cent of the number expected. A BBC television crew, with a camera high up on a hydraulic platform, seemed to be even less active than the previous day. Across Spithead, through gaps in the almost continuous wall of ships, we could see more yachts, two Thorsen ferries, six British Rail Sealink ferries, and even the Portsmouth-to-Gosport harbour ferry, all at anchor. With so many spectators on one side, each ship had a pronounced list.

Soon the gun went to warn vessels to stay clear of the fleet lines, and soon after that "Britannia" moved off from anchorage near the "Ark Royal", up the lines towards Cowes. Almost two hours later, back she came closer to. We were not close enough to see the Royal Family on the quarter deck, but near enough for "Britannia" to fill a camera frame. At this point we were surrounded by undisciplined motor boats rushing through the anchorages in a dangerous manner in order to keep up with, and eventually get in the way of, "Britannia". Then there was the fly past, much reduced from what we had seen the previous day, due to the bad visibility. And finally the all-clear gun for vessels to move as they pleased.

At this point we quit. We'd seen the fleet lit up the previous night, and didn't expect the fireworks to give full value on what promised to be a dull evening. So we set sail for a gentle run back to Chichester Harbour, with an occasional look back to the extraordinary sight of so many magnificent ships on show, forming an enormous backcloth to the forts "guarding" Spithead that will not be repeated on this scale for a very long time to come.

M.P.M. Hall

COHERENT CHEERS

(being extracts from R.N. Instructions for Man and Cheer Ship)

..... on the order 'Man Ship' men manning the side take one pace forward and grasp the guard rail underneath with both hands, palms upwards, right arm over the left arm of the next man to them (except Aircraft Carriers and other ships without guard rails). Drop the left hand to the side and seize the cap with the right hand, fingers on top and together, thumb underneath the rim.

Remove the cap and hold up at the full extent of the arm at an angle of 45° directly to the front, crown vertical and outboard.

On the command 'Hooray' men cheer 'Hooray' synchronizing with the command order, at the same time rotating the arm clockwise viewed from the rear around a diameter extending no lower than the shoulder and returning to the original position after each cheer. ....

After cheer, a pause of five seconds then :

Replace caps, hand remaining at cap Resume position with hands crossed on the rails. Drop hands to the side, take a pace to the rear (not Aircraft Carriers or Submarines) .....

'Hooray' is to be pronounced as spelt, the accent being on the second syllable.

ILLUSTRATED ISSUE

We hope shortly to produce an illustrated issue largely devoted to the recent presentations at the Laboratory.

STAFF NEWS

Congratulations to :

Lawrence and Marion Harris on the birth of their daughter Catherine Jane on 24th June.

Terry Roper and Carl Frederiksen who were married at High Wycombe on 2nd July.

Wendy Willard and John Dare who became engaged on 9th July.

Jacky and Vijay Sandal on the birth of their daughter on 25th July.

Chris Brown now S.D.P.

Welcome to :

Miss A. V. Roberts	A.S.O.
A. P. Begg	H.S.O.
M. R. Russell	S.C.S.
G. D. Addison	Vac. Worker
J. C. Sherman	H.S.O. (Culham)
Miss S. Greene	C.O.
S. Coyne	S.C.S.
I. Jones	S.C.S.
Miss G. Patel	S.C.S.
A. Swallow	S.C.S.
R. J. Lupton	S.C.S.

Resignations

Mrs. Q. M. Sams	C.O.
Mrs. J. M. Nasse	C.O.
D. A. Jones	P.T.O. III
Mrs. S. A. Laughher	C.O.

Retirements

Dr. J. A. Saxton	C.S.O. I
Miss E. M. Cottenham	S.O.
H. W. B. Gordon	P.S.O.
J. C. Butler	Messenger

Other changes

P. A. G. White	H.Ex.O.	Trans. to R.G.O. Herstmonceux
H. C. Bevan	S.S.O.	Trans. from IUE(a) to D.2 Gp. 2.

LIBRARY JOURNALS

The Library Committee have decided to stop the purchase of the following journals in 1978.

Astronomy and Astrophysics  
Communications of the ACM  
SIAM Journal of Numerical Analysis

The following journals will be taken for the first time in 1978.

Telecommunications Policy  
Physics in Technology

W. C. Bain  
Chairman, Library Committee

SPORTS AND SOCIAL CLUB NEWS

1. S.R.C. Sports Day

This year Sports Day was held at Chiswick on Wednesday, 13 July 1977. It was a fairly cloudy day, slightly cold for the time of the year, but once the action started the weather was soon forgotten.

After the presentation of prizes, a Disco, organized by Appleton Laboratory, was held till closing time. Attendance at the Disco was slightly down on last year, but was still well attended.

Hari Shah

Bowls

We entered two teams only, a triplet and a pair. As usual, we relied heavily on the expert performances put up by our skips. Although we did not win, we enjoyed all our games. A most enjoyable day was spent in pleasant surroundings, good company and under a reasonably cloudy sky.

C. Clarke

Bridge

This was the first time the competition was held, and after a lot of organisation problems it was decided to make it a pairs competition. Nine pairs were entered (4 from AL, 3 from LO and 2 from RGO). A most enjoyable 3 hours were spent playing and when the results were worked out Dr. W. Bain and Professor D. McEwen emerged victorious.

At the presentation in the evening, the "old" tennis trophy was presented, to be replaced by a new one soon.

Hari Shah

### Chess

This year's chess event was, as usual, between teams of three, each player being allowed a total of only ten minutes for all his moves. From the seven teams (three from AL, two each from RL and RGO) Appleton A (Eric Bramley, Dudley Long and Terry Burns) emerged victorious, having won all their matches. The best individual performance was that of Eric Bramley, who won all his games.

Appleton have now won this competition, which was an individual event for the first two years, five times out of seven.

Dudley Long

### Cricket

None of us had ever played six-a-side cricket before so we were not quite sure what to expect except that it was bound to involve a lot of running about. Each innings was limited to four 8-ball overs and the competition was run in two leagues of four teams. We succeeded in winning our league without losing a wicket. We let RGO 'B' score 17 runs against us, by far their highest score, but Barry Martin and Keith Dave, knocked the runs off in one over.

There was a long delay before we knew who our opponents were in the final, as the other league finished in a tie. The organiser's tie-breaking rules failed to resolve this, until Rutherford resumed batting to complete the full four overs in a game they had already won. Eventually RGO 'A' came out against us and knocked up 55 runs. After a slow start we never really looked like winning but were only 8 behind at the finish.

<u>Scores</u>	Atlas	34/2	AL	35/0
	Daresbury	42	AL	43/0
	RGO 'B'	17	AL	18/0
Final	RGO 'A'	55/2	AL	47/2

Team Charlie Wrench (capt.), Barry Martin, Bill Hayes, Charles Whitlock, Jeremy Allnutt and Keith Dove with Mike Johnson, the reserve, playing against RGO 'B'.

C. P. Whitlock

### Football

This year turned out to be the most successful ever in the six-a-side competition, with both our teams "winning" through to the quarter finals. Actually the 'A' team managed to get through without scoring a single goal.

The real honours belonged to the 'B' team who scored more goals than they had totalled in the previous 3 years, even affording to miss a penalty in one of the qualifying games.

Both teams went out in the quarter-finals, the 'B' team going down 4-0 to London Office 'A', the eventual competition winners.

Bob Young

### Netball

Our first match against Atlas was a very tough one and we lost heavily, but in the second match against London Office we were beaten by just one goal. When we met Daresbury (who were the eventual winners) we were well and truly defeated.

Nevertheless we enjoyed our day and hope to do much better next year.

We would like to thank all the boys who turned out to help us practice for the Sports Day.

The team was as follows :

Helen Benge, Janet Deviny, Sally Harries (res.), Lynette Kennedy, Veronica O'Keefe, Alison Porteous, Mary Robinson and Mary Thrift (capt.).

Mary Thrift

### Tennis

Appleton was once again well represented in the annual tennis tournament with a team comprising two men's pairs and four mixed. After an absence of two years Arthur Roberts returned to the fold and combined most effectively with Paul Gardner to retain the men's trophy. Both were in good form winning all their sets without much difficulty.

The mixed doubles attracted far more entries than last year and as a result reverted to the two section programme with the winners meeting in a best of three sets final. Richard Smith and Shelagh Akrivos hit their best form to win their section which included the former title holder. In the other section, Director and Mrs. Horner played consistently well to tie for top place on games won, but lost more games than the Rutherford pair who then proceeded to an easy victory in the final. For this they were awarded the newly presented Sir Sam Edwards trophy. Our other mixed pairs, Neil Bramley and Joan Scislawski and Jack Moore and Wendy Willard played some most attractive tennis, with Jack particularly devastating with his mid court volleys.

It seems appropriate here to express our thanks to Veronica Harrison and Colleagues of London Office for once again arranging such an enjoyable tournament.

Richard Smith

## 2. Cricket Club 1977

This year has seen our programme of matches sadly curtailed by rain. From a fixture list of 20 matches, 6 were cancelled, and it only remains for us to play the Treasury and CSD on 8 September - an afternoon match - and the end of the season ladies match to complete our programme.

This season the "RESEARCH LEAGUE" was formed by Appleton, Lilly Research, ICI Jealotts Hill, Wilkinson Sword, and Royal Holloway College Staff. All the league matches have been played and in an exciting end to the season we were

pipped at the post by one bonus point - the provisional rules for this season included 1 point for bowling out the opposition and 1 point for scoring 100 + runs - Royal Holloway College obtaining their final bonus point by bowling out Wilkinson Sword in the dark and rain in the last league match of the season.

	P	W	D	L	Batting pts.	Bowling points	Total
RHC	8	6	-	2	2	3	29
Appleton	8	6	-	2	3	1	28

Yaki Hassan is top of the batting averages with 275 runs average 35.83, while Keith Dove (227), who unfortunately leaves us this week, and Barry Martin (219) both averaged 27. Terry Paterson topped the bowling averages with 22 wickets for 151 runs.

To end the season a Disco will be held on 21st October, for details see the Notice Board in September.

With all the Appleton score books to hand, an exercise to see how many matches have been played against other clubs, and the runs and wickets taken by players over the years, resulted in the following tables being produced. It is hoped they are of interest.

Results 1968-1977

	Won	Drawn	Lost
1968	3	-	8
1969	6	-	8
1970	2	-	10
1971	7	1	10
1972	5	-	8
1973	11	2*	7
1974	10	1	10
1975	22	1	9
1976	14	3*	10
1977	8	-	4
TOTAL	88	8	84

\* includes a tie.

Batting and Bowling Averages 1968-1977

(v. other clubs)

(14 innings)

	Inns.	N.O.	Runs	Average
Y. Hassan *	34	10	792	33.00
T. Paterson	79	21	1295	22.86
K. Dove	21	5	308	19.25
B. Martin	107	11	1817	18.93
J. Kitt	89	15	1323	17.88
K. Sandal *	38	5	543	16.45
B. Moosajee	41	6	516	14.74
V. J. Sandal *	24	6	245	13.61
E. N. Bramley	23	4	244	12.84
P. Springate	14	2	149	12.42
P. G. Davies	61	10	532	10.43
G. Thomas	89	10	802	10.15
W. Hayes	45	14	258	8.32
C. Wrench	47	6	328	8.00
C. Boulton	19	1	140	7.78
W. Bellchambers	22	1	151	7.19
M. Johnson	61	13	321	6.69
E. Dunford	61	17	279	6.34
J. Allnut	27	4	154	6.26
F. Hemmings	16	3	78	6.00
P. G. Dickinson	54	6	264	5.50
E. A. Buck	37	6	166	5.36
D. Eccles	26	9	91	5.35
C. Whitlock	28	12	83	5.19
T. Bevan	37	7	154	5.13
H. Hopkins	15	2	62	4.77
J. Cathrew	26	3	66	2.61

\* Non Appleton Staff

(20 Wkts)

	Overs	M	Runs	Wkts	Average
C. Boulton	89	9	312	38	8.21
M. Hussain	41	7	189	21	9.00
J. Kitt	386	58	1162	120	9.68
T. Paterson	484	86	1621	161	10.07
E. Dunford	168	15	732	72	10.17
K. Sandal	197	24	649	63	10.30
T. Bevan	157	13	582	56	10.39
W. Hayes	280	28	1046	93	11.25
B. Moosajee	158	11	766	59	12.98
P. Davies	199	10	894	67	13.34
E. Buck	345	41	1195	75	15.93
D. Eccles	137	11	529	31	17.06
J. Allnut	107	7	432	25	17.26

3. BRIDGE CLUB

Last season saw the first team (Barry Martin, Mike Johnson, Tony Gibson, Terry Paterson) win Division III (Red) of the Great West Road Bridge League, and Barry and Mike win the Civil Service Southern Region Pairs competition. Our second team finished in a respectable middle of the order in Division III (Blue), and our third team although propping up Division IV (Blue) improved over the season to an extent where they can look forward with confidence to much better results this year.

For the 1977/78 season the first team will be in Division II in company with

- Richmond I
- West Ealing I
- NPL I
- NPL II
- Ealing I
- Ealing II
- Thistleworth I

the second team in Division III (Blue)

- Johnson and Johnson I
- Speedbird (British Airways) II
- Speedbird III
- Waterguard I
- Uxbridge II
- Ealing VI

the third team in Division IV (Blue)

- Thistleworth IV
- West Ealing IV
- Firestone II
- Hayes II
- CAV
- Johnson and Johnson II
- North Thames Gas (Staines)

Once more the club is looking for fresh talent to support the 3 teams and those interested in playing should contact the Secretary, Terry Paterson.

4. Forthcoming attractions for your enjoyment and participation

Saturday	10 September 1977	Barbeque
Friday	21 October 1977	Cricket Disco
Saturday	5 November 1977	Bonfire/Fireworks
Saturday	17 December 1977	Christmas Dance

More detailed information will be on S & SC Notice Board nearer the appropriate events.

Hari Shah

LETTER TO THE OUTSTATIONS

Dear Colleagues

..... well then ..... yes ..... here we are then. Lots of ideas; just need developing; fitting into context - you know the sort of thing. Still, good ideas merit more than cursory regard - pity to spoil the ship - bit pushed for time just now - best reserve them for more leisurely treatment. What then - I dunno - just ramble on a bit .....

Thus drifts this note upon the surface of what passes for the Editorial stream of consciousness. After all it is Summer, even if we do have to stretch the Trades Descriptions Act somewhat. People are on leave, the muse included. Well - not really - that muse is, at most, a distant nodding acquaintance. We needs must put the best face we can on to the all too blank paper. Call it an insight into how this letter might have got written but didn't. A present with good wishes from,

Yours sincerely

The Editor

July/August 1977 Reprint List

- A1206 G M Webb, K Burrows  
'High resolution measurements of the widths of narrow auroral arcs  
in the atomic oxygen green line and  $N_2^+$  first negative emissions'  
Planet Space Sci., 1977, Vol. 25, pp 405-410.
- A1027 H Rishbeth, T E Van Zandt, W B Hanson  
'Ion temperature troughs in the equatorial topside ionosphere'  
Planet Space Sci., 1977, Vol. 25, pp 629-642.

Internal Memorandum

NIL