



# APPLETON LABORATORY NEWSLETTER

Nos. 222/223/224

March/April/May 1980

## THE NEWSLETTER

For nineteen years the Newsletter has informed and entertained the Staff of RRS, RSRS and Appleton Laboratory. Times are changing, however, and "in present circumstances" it has been decided to end the Newsletter. Not least of the "circumstances" is that Geoff Gardiner, who has served so well as Editor, guide, philosopher and friend over the years, understandably wishes to be rid of at least the editorial part of his burden. No more will the Outstations be treated to privileged insights into the comings, goings and happenings of the Ditton Park microcosm.

It is a sad coincidence that the recent, penultimate Newsletter had to carry the obituaries of two former Directors of RRS, Dr. Saxton and Dr. Smith-Rose; and also a well-liked past Editor of the RRS Newsletter, Frank Kift. Over the years, the Newsletter has always featured retirements; the latest candidate for "the treatment" was Ross Meadows, who joined the Station in 1947. In this issue we are treated to Ross' own version of "A Passage to India". Fortunately we shall continue to see him, and in his new role he may well have the last laugh on us.

Newsletter No. 1, edited by Frank Kift and dated 15 May 1961, carried many interesting items. In particular I noticed, in Mr. Ratcliffe's message as Director, a welcome to Bob Dalziel who has just joined RRS, and a reference to a projected ionospheric incoherent scatter experiment using a big radar dish at Hillhead. That project never materialized, but many years later we did become involved with the incoherent scatter technique in the Malvern/Chilbolton/Jodrell/Aberystwyth MISCAT experiment, in some ways a forerunner of EISCAT.

For 49 years we have sounded the ionosphere (some might say THE ionosphere) vertically above Slough with various equipments. Latterly, the BAS Advanced Ionospheric Sounder has been cutting its teeth on 'our' ionosphere, I hope to good effect, before Going South in October. It is pleasing that our long-standing link with Antarctic research is still maintained today. Furthermore we expect to keep an ionosphere above us, somewhere, for many years to come.

This last Newsletter inevitably recalls something of the past. But we must look forward, too, to the future radio and space programmes that the Laboratory will conduct from its Chilton base. Even if techniques change, the Appleton Laboratory will continue to do exciting and useful science.

Among the many people who have taken part in producing the Newsletter so efficiently over the years, Irene Wells and her team deserve special thanks; and also Liz Morgan who has acted as Assistant Editor. But of course we shall always be especially grateful to "one so well versed in getting things unobtrusively and efficiently done as, your sincerely, The Editor". Thank you, Geoff.

SPACE ABOUT INDIA

When the Chairman and Sir Harrie Massey suggested that a party be made up to visit the Indian Space Research Organisation for discussions on possible future scientific collaboration, the question immediately arose as to who should go. Space research in India is not divided into "Science" and "Communications" as it is in Europe with ESA, so specialists in both sides were needed. Further, with at least five major establishments distributed over India the visit clearly required a considerable time and would be difficult to set up at short notice. In the end, Sir Harrie and the Chairman could not fit it in, and, accompanying Robert Boyd and John Houghton were Peter Barker, John Troughton (representing the DOI on communications and remote sensing), and I, primarily on the communications side. Alan Kemp of Central Office was responsible for making the arrangements (with the invaluable assistance of his secretary, Nora Atkinson) and kept us all in order on our travels.

Space research in India really began about ten years ago with the initiation of the planning for the US geostationary experimental TV-broadcast satellite ATS-6. The Indians saw the project as a golden opportunity to demonstrate the possibilities of satellites for communicating with the enormous number of villages distributed throughout the sub-continent, and for the forecasting of flood and famine. So important was the project considered to be that a separate organisation was set up, responsible directly to the Prime Minister. It cut across All-India Radio and the Indian Post Office. So much success was achieved with broadcasting from ATS-6 on subjects like farming and (they claimed) birth control that the Indians felt satellite communications to be the sine qua non for them. After all, they did not have a highly-developed internal trunk network, so a device in the sky which combined a TV transmitter with a telephone exchange seemed ideal. But how could India, a poor country, afford to develop the experiments provided free by the United States through ATS-6?

Clearly there was only one solution - to use the large potential labour force to construct their own rockets, satellites, and Earth stations, at low prices : they estimate costs as one-tenth those in Western Countries. Many will know of the observatory on the magnetic equator at Thumba, near Trivandrum on the south-west coast. Several of our staff have visited it. It has now developed into the Vikram Sarabhai Space Centre with a pay-roll of 4,800 people and a director from the electrical engineering department of Birmingham University. An east-coast range has been built just North of Madras, called the Shar Centre, for the development and launching of rockets which, it is hoped, will during the 1990's enable heavy communications satellites to be put into geostationary orbit. So far, the first rocket, capable of launching light satellites into low orbit, has been developed. The first test firing last year was unsuccessful, but two firings a year are planned. It is tempting to see whether certain satellite experiments can be miniaturised to enable our Indian colleagues to launch them as collaborative projects!

As to the satellites themselves, two payloads have been constructed at the Satellite Applications Centre in Ahmedabad, and the platforms at the Satellite Centre in Bangalore. They were launched by the Russians. The Indians were a trifle cagey when asked about the Russians, not, I suspect, because they had anything to hide but because they found them to be as much a mystery as we do. I don't think they were allowed to see very much. However, a senior meteorologist we spoke to in Delhi had been on a Russian meteorological ship and was telling us about their ways. He spoke particularly of the massive female matelots with enormous wrists : "heavy-duty women, By God!" The British style of humour has not yet vanished in India.

Their communications satellite APPLE has been constructed totally in-house to INTELSAT specifications, except for some space-qualified components, and is being tested using the impressive space-simulation equipment at Bangalore. It is to be launched by the ESA/French launcher ARIANE ("Ariane, the apple-carrier", says the diagram on the wall). Following this will be another INTELSAT-type satellite called INSAT, constructed and launched by the Americans, which will be the real start of a practical communications network. Remote-sensing equipment is also included. The Indians are busily constructing a hundred or more cheap and cheerful Earth stations to go with it : I do not think "mass-producing" would be the correct description in the technical sense, since the guiding philosophy is labour-intensiveness to provide employment for many people. And we all know what excellent craftsmen they are. We saw an example of this in the Meteorological Office complex at Delhi, where there is a factory making radiosondes. They produce about 50,000 a year. All components are made by hand, from the tiniest of bushes to the aneroid diaphragms. Just one turret lathe in the place - the rest are vintage centre lathes (even some British) but perfectly adequate. The Indian Meteorological Office is of course cooperating closely with ISRO in the provision of disaster warnings by remote sensing from satellites.

Before we embarked for India we were a little apprehensive owing to the earlier experiences of Peter Barker and Lewes Addison, who had passed through Bombay and Madras in the autumn on UK-6 business. However, our experiences were not as traumatic, possibly for three reasons : the incredibly efficient way in which ISRO looked after our party; because we did not go in the monsoon season, and because we did not have to undertake the mind-bending taxi drive on the wrong side of the blind bends between Madras and the Shar Centre. We did ride in town taxis a lot and began to understand the driving technique, which, I have decided, is that of the bullock carts, in which they follow a straight line because it is still the shortest distance between two points if the other chap doesn't get there first. I got to enjoy it in the end. Out on the open road, following the Great Trunk Road between Delhi and Agra (described so fascinatingly in Kipling's "Kim"), the technique is more relaxed. I thought I would have preferred to go to Agra on the Taj Express, the only steam-hauled crack express remaining in the world, but was almost glad I didn't. We did drive parallel for a time with "the Taj", a magnificent dark-blue train with continuous longitudinal cream stripe and WP-class locomotive to match. Single fare, 1st class air-conditioned, 120 miles (I should say 200 km, since the Indians have gone metric) £6, or 2nd class, 60p. I am glad to say that the train was fully booked and Indian Steam is much used. There are even plans to convert from metre to broad gauge in the Bangalore district.

You will have gathered that we were all (even Peter Barker) fascinated by India. John Houghton thought that the squalor and begging in Bombay were nowhere as bad as when he visited it about ten years ago. I myself was surprised to find how pro-British everybody appeared to be. Not perhaps surprisingly from the Maharajah with a bust of King George V in his Bombay entrance hall, and the 125 vintage cars in his palaces throughout Rajputana which made Robert Boyd so green with envy. Not quite surprisingly from the Director-General of the Indian Meteorological Office, an amiable Bengali from Imperial College who said that nobody would hear anything against the British, but surprisingly to me at any rate, perhaps naively, from the Delhi taxi driver who told us that "the British gave us back India and taught us how to live with the World". Mea culpa?

R. W. Meadows

STAFF NEWS

Congratulations to :

Mrs. B. E. Rathbone	now H.S.O.
D. M. Simpson	now P.T.O. 1
C. W. Nowell	now Chargehand

Welcome to :

R. N. Gorley	H.S.O.
A. R. Hodge	S.C.S.
R. B. Dawes	P.T.O. IV
S. J. Hunt	S.O.
A. D. Stevens	P.T.O. III
M. J. Stenzhorn	P.T.O. III
K. L. Chau	S.C.S.
W. B. Johnston	H.S.O.
A. P. Van Eyken	H.S.O.
H. F. Chan	S.C.S.
Miss Y. Khaliq	S.C.S.
R. C. Poole	S.C.S.
J. C. Blades	H.S.O.

Resignations etc. :

T. J. Bevan	H.S.O.
Mrs. B. E. Pearce	C.A.
Mrs. P. Coggins	Canteen Asst.
Mrs. N. P. P. Taylor	Temp. Appt.
L. C. Hammond	S.O.
Miss V. Williams	A.S.O.
D. Stickland	S.S.O. Trans. to R.G.O.

Dr. R. M. Laws F.R.S.

We are glad to be able to offer our congratulations to the Director of the British Antarctic Survey, Dr. R. M. Laws, on his recent election to Fellowship of the Royal Society.

### INDOOR SPORTS DAY

This is the last full report of Indoor Sports Day activities by Appleton Laboratory personnel to appear in the final issue (collector's item - whose value is bound to appreciate much faster than the present trend in inflation rate) of the much loved and appreciated Appleton Laboratory Newsletter. Having done that, let's get down to it.

As everyone would know by now, the Indoor Sports Day was held on Friday, 18 April 1980 at Oasis Leisure Centre, Swindon - which is also going to be the venue for next year. Being much nearer than last year, the event attracted more A.L. staff. It was quite a successful day in more ways than one and following presentation of trophies by the Chairman of SRC, Sir Geoffrey Allen, where this year A.L. actively participated by collecting not one but two trophies, many moved on to the Super-Disco at the Central Office for more refreshments, exercises and to relax in a pleasant atmosphere. Apart from headaches from spectators and participants changing their minds fairly often, it was a very successful day and one can only hope that next year it would be even better.

Reports of various A.L. teams - their success and failure - follows. There are some reports which are not written by their captains and this is in spite of constant efforts of the organisers to induce the 'captains' of the events to put something down on paper. It is a hard life running around in ever decreasing circles.

This year many of A.L. staff are at Chilton site, myself included, and as such, more organising and co-operation was needed. In this aspect I would particularly like to thank Terry Paterson for being the King-Pin at A.L., Slough, and everybody who came to Indoor Sports Day, spectators as well as participants. And, in passing, just a reminder that the Outdoor Sports Day this year is on Wednesday, 2 July 1980 at Imperial College Sports Ground at Harlington (not far from Heathrow Airport) - Fuller's Beer area, followed by Disco at our own Appleton Laboratory. Posters will be on display soon and the events are Angling, Bowls, Cricket, Football, Hockey (mixed), Netball, Tennis (mixed pairs and mens pairs) and Tug-of-War (mixed).

H.S.

### BADMINTON

We entered 4 mens pairs and 2 mixed pairs in the sports. Every pair lost one game only in their league but unfortunately there was always some clever pair of badminton players who won every game in their league so not a single one of our pairs reached the semi-finals. Indeed the semi-finals were rather swamped by our Rutherford colleagues.

However I would like to congratulate Swindon on their organisation of the event which went like clockwork, my only criticism being that it was so efficient it finished too early and early games could have been best of three instead of sudden death.

What a lovely sports centre - again next year please.

The following were our participants -

Mixed pairs

1. Janet Deviny  
Roger Burdett
2. Monica Kendall  
Brian Maddison

Mens pairs

1. Julian Bailey  
Alan Smith
2. Kim Ong  
Alan Stevens
3. Charles Sethna  
Mike Isherwood
4. George Spalding  
Richard Browning

R.B.

BRIDGE

With lot less travelling than in the previous two years, and keeping the day clear of other commitments, we were at last able to attract some big names. I myself had some problems - my regular playing partner, Bob Ely, had to drop out at the last minute. However, as luck has it I was fortunate enough to get Barbara Rathbone as my partner, at such a short notice and considering that we had not played together for over a year, we did not do too badly coming fifth in the event.

The pairs event was organised on a 27 board Howell movement with 9 pairs participating. Excluding a break for lunch we played for nearly three hours and at the end after everybody had played everybody else, we all converged on Terry Paterson - who had done all the organising of the Bridge Tournament - who started doing the scoring. After hours (actually few minutes only) of suspense our Ace players, Bill Bain and Barry Martin emerged as the outright winners to take our first trophy at any event in Indoor Sports Day. This was A.L.'s day because later on our Volleyball team (based at Chilton) won as well. Terry Paterson and Tony Gibson were unfortunately beaten into third place by just one point. Still I think we can now look forward to retaining the trophy next year with I hope, more participants.

Apart from one board, when 16 cards appeared in one player's hand, everything went very smoothly and efficiently. Alas no one played 7 No trumps, doubled, redoubled and vulnerable and made. Still there is next year to come.

H.S.

### CHESS

The lack of 'big' names (Karpov, Korchnoi, Tal, etc.) was conspicuous - alas, none are employees of A.L. - but this did not spoil the day's enjoyment.

In each game we had all of 10 minutes to beat the hell out of the opposition, however the 'excitement' value was high since appalling mistakes were made, glaring opportunities missed and the game is never over until the (clock) flag drops dead.

I played 5 games in all; the first 4, one after another in quick succession after driving through a busy Swindon, getting lost (?!\*!), and arriving  $\frac{3}{4}$  hour late only. I lost them all, but my vitality was replenished after a lunchtime break and I broke my duck in the 5th.

Verdict - hot and sweaty in a claustrophobic 'range' of the otherwise impressive oasis, but as IRAS's and A.L.'s only chess rep. I enjoyed the day out.

S.G.

### CRIBBAGE

Another last minute player drop-out caused a near panic and after a very hurried chase and a bit of 'gentle persuasion' a new team emerged consisting of Andrea Roberts and John Stenning.

With fourteen teams participating divided into four leagues our A.L. team ended up in a league with three teams only. Playing doubles Andy and John did quite well by winning one match and losing one. So did the other teams. Oh well! Call in the controller. Consult him. The games started again and as there was no outright winner last time it was decided that this time the winners would be the ones who lost by the smallest margin. Sharpening their wits, it all started again, we won one and lost one. Same everywhere again. But alas, only 4 points stopped us winning the league. Never mind, with more players and better luck we may win next year.

H.S.

### DARTS

Being the biggest contributor of the participants on the day - 16 teams of 5, the area was to say the least bit overcrowded, but it has its compensations - the bar was adjacent and hence there was no loss of drinking time and refreshed the parts other .....

All players in each team were numbered from one to five and played against the players bearing the same numbers. Games were 301, straight in, doubles to end. Well the team made a good start winning more games against the other 3 teams

than losing, so well deservedly we ended up in the quarter finals. Whether the beer had lost its powers or whether something else had happened, we did not regain our glorious form and in a well contested game, just managed to lose. Only if - had not lost his game after such a good start.

The participants were Graham Fleming, Ron Lewin, Mike Trower, Ron Wakefield and Dennis Wild.

We also managed to raise a scratch team. All the players apart from Ved Sandal, wish to preserve their well being by remaining anonymous. One only wishes to oblige. So there!

H.S.

### SQUASH

The Appleton team based at Chilton consisted of Terry Dunwoody (undoubtedly the best player in the competition), Ann Willcock (undoubtedly the prettiest player in the competition) and Dick Holdaway (undoubtedly the most average player in the competition).

The first match was against Daresbury, and resulted in a crushing victory for the Ayatollahs of Didcot. Backed by the wild enthusiasm of the rampaging crowd of supporters chanting "Death to the Imperialists of Central Office", we marched triumphantly into the game with C.O. and came a very close second. The disappointed crowd considered hanging a few C.O. hostages but relented on humanitarian grounds plus the news that the bar had just re-opened. We have abandoned our plan for altitude training, having unanimously voted not to send our team to the Moscow Olympics, but only to Swindon again.

D.H.

The Appleton-based team consisting of Mike Courthold (forgot to shave again), Nick Whitehead and Christine Grubb came up against fairly strong opposition in both their games and not surprisingly, did not win any games. Still, I am told that they are going to put in a lot more practice in anticipation of doing a lot better next year.

H.S.

### TABLE TENNIS

The Appleton Table Tennis Team underwent a major setback when, hours before Indoor Sports Day, it was announced that international superstar and team captain, Pierre Nierinck, was unable to compete. A desperate last minute search for a replacement revealed nobody. Nobody, alias Roger Tarring, after several large gins, was persuaded to participate in Pierre's place.

The team was now made up of skipper Nick Myer, sandwich course students Said Issad and Roger 'Terror' Tarring.

The draw left Appleton to face the might of Atlas and RGO in League '2'. The high point of A.L.'s fortunes came when Said called 'Heads' and won the toss to choose service for the first game against Atlas. From then on the team's performance rapidly declined. Unable to win a single game, it was all over for A.L. by 1.00 p.m. The team retired to the bar and contemplated the campaign for 1981, and the possibility of keeping 100% no games record.

N.M.

### VOLLEYBALL

The volleyball was organised in two leagues with 4 teams in each league. Games were decided on the number of points scored in a 15 minute period. The Appleton 'A' (IRAS rejects) team found itself in the stronger of the two leagues, having to play both Daresbury (last year's winners) and Central Office. Our first game, against Rutherford 'B', gave us an easy win, but the second game, against Daresbury, was much harder than the 14-3 scoreline suggests. The tightest game was against Central Office, with a 10-10 scoreline one minute from time, but Jane Biggin served well to give us a few vital points for victory.

The final was something of an anti-climax, with a comfortable win over RGO, the winners of the other league. Another trophy for Appleton.

The Appleton 'A' team was :

Leo Barendse  
Jane Biggin  
Alan Buck  
John MacDougall  
Steve Martin  
Wim Pol  
Graham Thomas  
Jimmy Yeok

And thanks to Hari Shah who actively participated in our practice games.

G.T.

The Appleton 'B' (Slough leftovers) team consisted of Jim Foster, Mike Farman, Charlie Wrench, Nigel Angold, Avfar Hundal and Stephanie Bridger. After winning our first game against Atlas fairly easily we lost in our second match to RGO who eventually won the league. We came back with renewed determination to beat Rutherford 'A' team. But two wins out of three were not enough. Still next time we might make it an all Appleton final. Who knows.

H.S.

LETTER TO THE OUTSTATIONS

Dear Colleagues,

This Newsletter is, as you see, the last of its kind. Substantial numbers of staff are now at Chilton and mutual interests will best be served by the Bulletin which already, quite properly, reflects Appleton activity on that site.

A forerunner to this series, produced in the early 'fifties, makes reference to our then recent divorce from the National Physical Laboratory, the projected new buildings (now complete this last quarter-century) and to the need to comment more on specifically Ditton Park activities. The same applies, mutatis mutandis, to our current relocation.

By the arrival of number one of this Newsletter, space science articles gave evidence of the changed responsibilities which had come about in the span of only five or six years. However, a surprising number of familiar names, still with us, lend a comforting air of continuity to our efforts.

For my own part I welcome the new Bulletin. Conversation and reading I like but attention to editorial detail and writing, both literally and in the wider sense of the word, do not come readily; the necessary patience being (I hope) a triumph of artifice over nature.

Over the years, many have helped (sometimes unknowingly) to provide grist for the editorial mill. Thank you all. My most particular thanks to Liz and to Irene and her colleagues for support and much-needed encouragement to make me get a move on with copy.

The best of British Luck to Jean Banford, Editor of the present Rutherford Bulletin, in her now augmented task. To readers of this old series I offer thanks for support and suggestions (of all kinds!) from one who is 'on one point rather sad but, on the whole, delighted' to relinquish the role of,

Yours sincerely,

The Editor