

## "WE ARE PROUD OF YOU" say the Lord Lieutenant and our USAF customer



INSTRUMENT SYSTEMS DIVISION

The ceremony of Presentation of the Queen's Award for Technological Achievement to ISD was held on 7 October in the New Hangar.

Her Majesty's Lord Lieutenant of Kent, The Rt. Hon. Robin Leigh-Pemberton, was our Guest of Honour, other distinguished guests included the Mayor of Gillingham, the Deputy Mayor of Rochester-upon-Medway, the Mayor of Gravesham, and the Bishop of Rochester.

Our customers for the SCADC system which gained the award were represented by John Lapp, SCADC Program Manager for the US Air Force, who has been involved with the contract since its beginnings in 1981, and Ivan Rlage the US Navy manager replacing the legendary Lowell Thomas, now retired from the Navy.

In addition, a number of



The Lord Lieutenant with Fred Wickham and Dave Silsby

ISD's 120 suppliers and subcontractors were present.

The ceremony was introduced by GAV Chairman Sir Michael Beetham, who welcomed the Lord Lieutenant - on his fourth visit representing Her Majesty to present an Award - and all the other guests and employees.

Managing Director Ron Howard summarised the history of the contract and commended "the accomplishment of a highly competent, dedicated team of people".

Then, in the presence of the ISD people and many from other divisions who have contributed to the programme, the Emblem of the Award was received by Dave Silsby, Technical Manager, and the Grant of Appointment signed by HM The Queen, by Fred Wickham, Production Manager.

John Lapp thanked all those involved in providing the "highly satisfied users with the best system we've ever had. On behalf of the USAF and USN I wish you continuing success".

Before and after the presentation, displays provided by ISD Technical Publications and Exhibitions Department and a two-part video made by the Audio-Visual Unit were on show. Buffet lunch was provided in the Hangar by the Canteen staff.

**Divisional Manager Fred Mackley, and Dick Lewis, Marketing Executive in charge of the arrangements for the day, publicly thank everyone who helped with the presentation of this highly successful occasion.**

## RON HOWARD'S MESSAGE AT THE LSA DINNER

The Fifth Annual Dinner and Dance of the GAV Long Service Association, held on 22 October, was attended by over 670 members and guests in the Main Canteen.

In his reply to the Toast to the Company, Ron Howard had some encouraging thoughts, prompted first by the celebration of our 13th Queen's Award - the only GEC company to win this accolade this year. In the 1987-88 year, GAV was the biggest single company exporter in GEC, with £201 million going abroad, "An achievement of which you should all be justly proud".

Nevertheless, in spite of the fact that 550 of the LSA's membership of 734 are still working for the company after 25 years, there is sadness at the current loss of so many younger employees. The unusually high leaving rate gives great concern, as do certain rumours circulating which are completely without foundation. Among these, the rumour about moving; it is fairly obvious that we are spending a lot of money on the site and buildings, and this is not in order to sell them!

"With regard to this, I want you to be the first to know that we intend to name the entrances to reception areas - the new hangar entrance will be "The Stirling Entrance", the south side "main hall" "The William Elliott Entrance", and the main Towers entrance the one of which we will be most proud, "The Jack Pateman Entrance".

In winding up his reply to the Toast, Mr. Howard recalled that the "company" is primarily the workforce, over 6100 at Rochester, and over 550 at other sites. Associate companies in the US have over 1800.

Between us this year we will be doing over £300m business outside Britain. And we are now listed, in conjunction with our US associates, as one of the top 100 aerospace companies in the USA. "We are a top company by world standards, with, as always, an assured future".



## 1000th 'CSAS' delivery by CACD

Thursday 27 October saw the formal delivery of the 1000th Command and Stability Augmentation System flight control computer, a vital element in the fly-by-wire system in the Tornado. This £8m multi-million project has spanned over 15 years of design, development, production and delivery, over 700 of the aircraft have now entered service with the Air Forces of Britain, Germany and Italy. Orders have been placed by several other nations.

At a private ceremony in CACD, Divisional Manager Simon Frost handed over the computer to Panavia's Deputy Director of Procurement, Herr Mueckley. To honour the occasion, there was a fly-past of two Tornados from 617 Squadron, RAF Marham.

And on the Saturday, over 700 family and friends of CACD people came in for the Open Day.

A picture souvenir of the day is planned for the next issue.

## "The Airship handled superbly with its controllability transformed"

Thus said Roger Munk, Chief Designer and Technical Director of Airship Industries, after the maiden 'fly-by-light' flight of Skyship 600 on October 23 at Weeksville, North Carolina. Piloted by Chief Test Pilot Dave Burns, this was the 'world first' successful airship flight using fibre optic signalling,

rather than vulnerable electrical systems.

The unique 'fly-by-light' system developed by FARL for FCD, is being used by FCD on a contract held by Airship Industries for an Operational Development Model airship for the United States Navy, which has a potential need for around 50 radar surveillance airships.

## Milestone in Atlanta

In a special ceremony on the evening of September 30, GEC Avionics Inc. President William Broyles presented the company's first Carbon Dioxide Laser Rangefinder to Jim Golec of the General Dynamics Land Systems Quality Assurance Department.

This eyesafe CO<sub>2</sub> rangefinder will be installed in the Abrams M1A1 tank and marks the first time the United States military has used a CO<sub>2</sub> laser in a combat vehicle.

This first delivery comes 13 months after the contract award and is one of 18 units to be delivered in this phase

of the full scale development. The laser tubes in the rangefinder are produced by the GEC Avionics Applied Physics Division in Borehamwood.

At the time of the delivery, Mr. Broyles congratulated Ray Hillman, Vice President, M1A1 Program, and the Atlanta team for their outstanding effort and also expressed appreciation to Bob Eves and the many other company employees in the UK whose help made this milestone possible.

**Well done Atlanta - and Borehamwood!**



William Broyles, GEC Avionics President and CEO (left), delivers the first laser rangefinder to Jim Golec of the General Dynamics Land Systems quality department. (Photo by Karen Asher)



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 Maurice Sparham, CQD (Flying School)  
 Phyllis Ellis, CMS.  
 Volunteers should offer their service through Divisional Administration Officers or direct to the Editor.

## Editor's Notice Board

**Festival of Nine Lessons and Carols**  
 ALL SAINTS' CHURCH  
 Magpie Hall Road, Chatham  
 Monday 12th December  
 at 7.30 pm  
 with  
 GEC AVIONICS BRASS BAND  
 and  
 CHOIR OF  
 ALL SAINTS  
 ALL WELCOME



### Travelling from Whitstable?

4th person required in  
 Car Share Scheme  
 to GEC Avionics-Main Factory  
 Hours  
 8.00am - 4.00pm  
 if you're interested please phone  
 Alan Ext. 3372  
 Nigel Ext. 3191

### Japanese Chess Club

meets at the Black Lion Pub  
 by Gillingham War Memorial  
**Tuesdays 8.00 pm**  
 All Welcome : Basics taught  
 For further details  
 phone Neil Ext 3366

### LIFT WANTED from SITTINGBOURNE

for 7.00 - 7.30 start, possibly some evenings also.  
 Can anyone help?  
 Phone TIM Ex. 3711.

## We left out GSD's MLRS team

The report of Lord Prior's visit which appeared in the last issue, which mentioned GSD, did not record the contribution of the MLRS team.  
 At short notice preparations were made to show the GEC Chairman how the Multi Launch Rocket System project is progressing; in the contract with the European consortium between the governments of the UK, France, Germany and Italy, GSD is in the final stages

of setting up for production of the Stabilised Reference Package/Position Determining System (SRP/PDS).  
 This will be the culmination of several years' work. Deliveries are due to commence at any moment now, and will continue for several years.  
 Apologies to GSD, and indeed to any other team omitted by not appearing on the visit programme.

## CHARITY for MEDWAY

### WANTED - 500 FUN RUNNERS

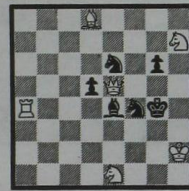


CHARITY for MEDWAY the non profit making fund raising organisation formed by Medway athletes Paul Nihill and Lynn Hughes to help local charities, stage their second 2 1/2 mile charity fun run on Sunday 20th November, in conjunction with the well established Rochester half marathon.  
 It is hoped that this year's entries will exceed 500 as compared with the 300 who took part in last year's event.  
 Organisers Paul and Lynn particularly want to encourage local charities, clubs, pubs, schools etc., who require money, to enter teams.  
 Runners are invited to run for any local charity of their choosing and if they haven't got one then CHARITY for MEDWAY will be able to recommend one for them to represent.  
 Last year's run raised money for many local charities and the

runners who were originally without a charity ran for the Friends of Gillingham Mentally Handicapped Social Education Day Centre who were in need of a conservatory. Sufficient funds were raised to enable this to be achieved.  
 All runners who complete the fun run or the half marathon will receive medals. Entry forms for both events can be obtained by sending a stamped addressed envelope to CHARITY for MEDWAY, 28 Larkfield Avenue, Gillingham ME7 2LN or by contacting Paul on Ext 3639 - or you can just ask for a form on the day.  
 Both runs start in The Brook, Chatham, near the Pentagon Shopping Centre; the fun run at 11.00am and the half marathon at 12.00 noon.  
 For further information contact:  
 Paul Nihill MBE (ATED)  
 Home: Medway 50293 or  
 Ex 3639

## CHESS PROBLEM

White to play and mate in two moves



Solution on Page 8

## New Appointment of Energy Manager - Works Engineering Services



Bob Harris has recently been appointed as Energy Manager within Works Engineering Services and is responsible to the Works Engineer for all activities in energy conservation.  
 Bob joined the Company in May and was previously employed at Honeywell as a Computer Control Systems Engineer. Much of his work over the last eight years has been on energy management systems in buildings. His experience is further extended

by earlier employment with Satchwell Control Systems carrying out similar tasks.  
 Some evidence of Bob's presence can already be seen, particularly in the tower blocks where lighting units have been changed for the more economical variety.  
 The use of energy is of particular concern throughout the Company, quite understandable when faced with electricity bills in excess of £1.5 million per year. In this connection GEC employs an Energy Adviser who is responsible for carrying out Energy Audits on the main sites within the Company. His last visit was October 1987 and as might be expected he was able to make some recommendations, and it is these which are being implemented now.  
 It should be clearly understood that it is not the Company's intention through energy saving to degrade the working facilities by reducing lighting levels or heating, but merely to identify those areas of wastage and where energy could be saved. It is up to all of us to become more energy conscious and to make savings wherever possible.

## SHORTS REUNION

The closure of Short Brothers Long Service Association recently left no opportunity for old friends to meet; the departure of Shorts from Airport Works to Belfast in 1946 (except for some activities which continued at the Flying School till 1962) meant that the LSA consisted of a diminishing number of their ex-employees who stayed in Medway - some of them with Elliott Bros/GEC Avionics until their retirement.  
 Jack Chinery who now lives in Hayes has kept in touch with the ex-members, and with the help of Les Fell who retired from WES last year the arrangements were made for a reunion at their old work-place.  
 Over twenty former Shorts people, some with their spouses, came back on 14th September. Hosted by the

company and under the guidance of Harry Staff, they toured the main factory area and were astonished by the transformation which has taken place in what they knew as large echoing hangars, still leaking after the wartime bombing. They enjoyed a buffet lunch and spent much time meeting old friends sometimes not seen for many years.  
 The oldest guest was nearly ninety, and the longest journeys were from Belfast and Bath.  
 In the group photograph may be seen the ex-Shorts people from among this list of those who attended.  
 Ted & Rita Bolton (Upper Upnor)  
 Mrs. Prim Bell (Croydon)  
 Bob Bruce (Lenham)  
 Norman Brown (Dartford)



Geoff & Kath Beach (Sittingbourne)  
 Mrs. Dot Clements (Gillingham)  
 Jack & Beryl Cross (Harristham)  
 Jack & Louie Chinery (Hayes)  
 Mrs. Dorothy Elsdon (Rochester)  
 Les & Vi Fell (Wigmore)  
 Peter Hammond (Belfast)  
 Harold & Paul Harrison (Borsari)  
 Norman Harry (Dartford)  
 Bert & Ellen Le Core (Rochester)  
 Reg & Doris Le Core (Rochester)  
 Jack & Kay Lander (Dartford)  
 Norman & Doris Linwood (Birchington)  
 Dennis G. Miller (Maidstone)  
 Frank Martin (Sevenoaks)  
 Cliff & Gladys Pearson (Cliffe)  
 Mrs. Audrey Young (Bath)

## BOREHAMWOOD RETIREMENT

On Friday 26 August, the staff of Applied Physics Division (Borehamwood) said goodbye to Margaret Clifford on the occasion of her retirement. Margaret came from Scotland and in 1965 found work with Marconi Instruments in St. Albans. In 1972 she decided to find a new job, and was offered a position with the Applied Physics Division (then called the Neutron Division) in the neutron tube test department. She recalled that she expected that job to keep her interested for a year or so and then to return to Marconi Instruments. However, she liked the Division and its people so much she stayed for 16 years.  
 At both her retirement lunch and presentation, we were pleased to welcome back some of her former colleagues who had either retired or moved away from the area. Margaret was presented with a fully automatic camera and films for use during her forthcoming visit to Australia. All our best wishes go to Margaret in her retirement.



(L to R) Mr. R. Holmes, Mrs. K. Steele, Miss M. Clifford, Mrs. V. Wildridge, Mrs. S. Murray, Mr. D. S. Harris & Mr. N. Nash



# YOUR PERSONAL PENSION SCHEME



**Alan Gillet, our elected representative for the Rochester/ Nailsea constituency in the South London Pension Advisory Committee for the GEC Pension Schemes, has contributed this information for guidance.**

By the time you read this article you may have seen the GEC Plan video and leaflet, "Choose the route for a better retirement". You will no doubt also have read many newspaper articles on the subject of pensions. This year, in particular, with the change in legislation allowing people to opt out of company pension schemes and contract out of SERPS, there is no shortage of choice. If you are confused or still unsure what to do, perhaps I can help by answering the most common questions I am asked.

## Government Pension Changes

**SERPS** – State Earnings Related Pension Scheme – is a Government scheme that was introduced in 1978. It is an unfunded scheme, i.e. the contributions are not invested. Instead, the money collected pays for those receiving a pension. The concern is that the contributions will not meet the demand. Hence the proposed changes:—

- Pensions to be based on average lifetime earnings instead of best 20 years.
- Maximum pension of 20% of earnings instead of 25%.
- Widow(er) will inherit 50% instead of 100% of spouse's pension.

These changes are to be introduced after the year 2000.

Stanhope Pension Trust have improved the Plan calculation to compensate for the SERPS reduction. This change is in operation now, and should bring a smile to the worn old faces of those who will retire before the year 2000 because they will get the best of both worlds, full SERPS provision and improved Plan calculations.

## Contracting "IN" or "OUT"

The above terms simply mean the following:—

"Contracted in" – means we contribute through National Insurance payments to the State Earnings Related Pension Scheme and on retirement draw this element on top of the basic State Pension.

"Contracted out" – reduced National Insurance payments (or part of National Insurance contributions diverted to Appropriate Personal Pension). On retirement only entitled to the basic element of the State Pension, but, the equivalent of 'SERPS' is provided via a 'contracted out' company scheme or replaced by Appropriate Personal Pension.

The GEC Plan is 'contracted in' but members can 'contract out' on an individual basis by buying an Appropriate Personal Pension. This is unlikely to be a good option if you are over age 45 (see leaflet "More about your pension choices").

## Plan Benefits

The Plan booklets clearly explain what benefits you get from the Plan. The pension from the GEC Plan is based on the best of three different methods of calculation. The Basis 1 calculation is based on final pensionable earnings and pensionable service. Adjustments are made to Basis 1 pensions to allow for State Pensions.

The Basis 2 calculation is simply 40% of your total contributions. This would possibly give the best result for those who will be members for only a short time.

The Basis 3 calculation is 17.5% of your total contributions with credited interest. This is a money purchase scheme which is similar to those offered by insurance companies although a personal pension is unlikely to provide an annuity rate of 17.5%.

## Understanding the Annual Statement

1987/88 statements have recently been distributed to Plan members – if you have any queries or difficulty with your statement, contact Di Bower (Personnel), or myself on Ext 3005.

If you have a reasonable time to go until retirement the Basis 3 figure is almost certainly the best predicted pension for you. This calculation assumes an annual credited interest over future years of 10% and no inflation/pay increases. As a result the predicted Plan pension for someone currently earning £10,000 per annum joining the Plan at age 30 is about 166% of final earnings. But if interest is [say] only 1.5% per annum higher than pay increases the figure becomes 27% of final earnings. (Any State Pensions or Appropriate Personal Pensions (APP) would of course be paid in addition). Estimates of State pensions can be obtained by completing form BR19 (available from the DHSS).

If you decide that your retirement income is not going to be enough then you will need to consider Additional Voluntary Contributions.

## SBS (Selected Benefit Scheme)

FSAVCs – Free Standing Additional Voluntary Contributions are not available to GEC employees. It is, however, possible to "top up" your pension with an additional voluntary contribution (AVCs) to the Selected Benefit Scheme. Anybody contemplating this can obtain a quote through the Personnel Department. For example if you have a target pension in mind as a percentage of your final pay, you can ask what contribution you would need to make to top up to achieve it. You can also target for retirement at earlier ages than 65 (60).

## Early Retirement

If I was asked what I thought was most people's ambition, I would have to say that it was to retire early and comfortably. The basic State Pension and SERPS or any APP (which form a significant part of retirement income) will only be payable at 65, for men, or 60, for women. The GEC part and any SBS, therefore, are the only parts that can be taken early, but they will be reduced below an estimate given for retirement at State pension age because of the loss of contributions between retirement and age 65 (60) plus a further deduction to allow for the longer period for which the pension is expected to be paid.

As an example, if we were to take again our 30 year old, who had just joined the Plan and was earning £10,000 a year, the figures appearing on his benefit statement might look something like this:—

Basis 1	£ 3,131 p.a.
Basis 2	£ 4,900 p.a.
Basis 3	£16,600 p.a.

If the above figures were adjusted to allow for inflation and pay rises, so that they can be compared with today's pay, they might become:—

Basis 1	£2,667 p.a.
Basis 2	£1,572 p.a.
Basis 3	£2,576 p.a.

If our employee was considering retirement at age 60, then his prospective pension (again related to today's pay) could be:—

Basis 1	£2,071 p.a.
Basis 2	£1,218 p.a.
Basis 3	£1,909 p.a.

he may therefore wish to consider topping up his pension via payments to SBS.

The option of an increased pension before state pensionable age is available to Plan members but the total pension in payment would be reduced at State pensionable age for anyone taking this option. Individual quotations for early retirement are available on request from Stanhope Pension Trust Ltd via your Personnel Department.

## Elliott Pension

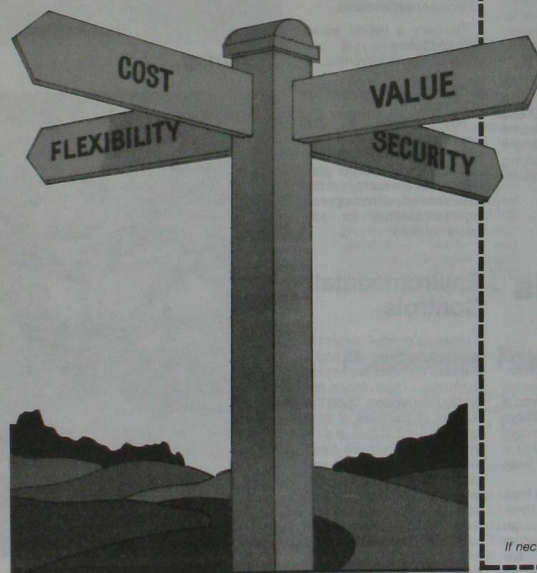
Benefits which were formerly payable from The Elliott Funds are secured under The GEC Plan in the form of deferred pensions. These pensions increase at the same rate as 'Plan' pensions in payment. In previous years the figure shown on your periodic statement has allowed for increases actually awarded, plus projected increases up to age 65 (60). This year the statements only include increases actually awarded to 1 May 1988. Future increases will be added as and when they are declared.

A second chance is given that may provide a better pension result. Your transferred contributions are increased each year in line with credited interest. If the annuity the accumulated sum can buy is greater, this will be paid instead.

## Pension Transfers

Anyone leaving the GEC Plan can ask the Trustee to pay a cash equivalent to another scheme, as an alternative to a deferred pension. The cash equivalent represents the expected cost of providing your deferred benefits in the Plan and will not be less than your Plan contributions and interest.

*If you have any questions relating to pension matters of a general interest please address them to me, or Di Bower, and we will attempt to answer them.*



To Di Bower, Personnel Department  
Alan Gillet, Pensions Representative  
(Please delete as appropriate)

From \_\_\_\_\_  
Div/Dept \_\_\_\_\_

If necessary please continue your query on a separate sheet



# FROM CHAOS TO CLEAN ROOM

## ISD Microsystems— from Radlett to Rochester in 6 months!

After cancellation of the Nimrod AEW contract in December 1986, the decision was made to reduce the size of the company's Borehamwood facility, and to close the outlying Radlett plant. Radlett then housed some of the AEW staff, the Lightweight Structures Department and the Thick Film Hybrid facility, so the search was on to find new sites for LSD and Thick Film departments.

Coincidentally, ISD had just started up a hybrid prototype department and eventually, after negotiation, it was decided in July 1987 to move the Radlett Thick Film Facility to Rochester, although the actual move was not scheduled until September that year, so that existing production commitments could be met before the anticipated disruption.

Work to strip the Radlett facility took a month, with most of the large pieces of equipment being put into store.

The ISD Hybrid prototype department at that time had only just been set up by Len Martin, and consisted of one 800 sq. ft. clean room with equipment to assemble, inspect, wirebond, test and seal hybrids. In order to accommodate the Radlett people and the necessary print, fire, laser trim, and environmental facilities, extra space and services were required, so work commenced in September 1987. Low volume production of existing contracts and the training of new clean room staff carried on in the existing clean area, whilst the building work on the mezzanine floor was in hand.

Work continued throughout Christmas 1987 and was finally completed in April this year, but two weeks after the facility was up and working it was discovered that the airconditioning was not working properly due to

pressure in the underground water pipes. These were dug up in the road alongside the towers which then caused another problem – the dust disturbed by the 'road works' was sucked into the airconditioning intake and deposited in the 'so called' clean room!

Nevertheless, despite these set backs, ISD Microsystems has been up and running since May this year. In the short time the department has been here at Rochester, eight new hybrids have been designed, developed and manufactured (including work for the Mini SCADC and a Nuclear Event Detector hybrid in conjunction with FARL, New Road), in addition to continuing production work for GSD's Dual Axis Rate Sensor Unit, hybrids for Recording Systems Division, Sonar Systems Division and MoD.

The Department is presently requalifying hybrids to MIL-STD-883 Method 5008 for Airborne Display Division, enabling it to continue supplying hybrids that were initially qualified at Radlett.

### How a hybrid is made

Using screen printing techniques, conductive, insulating and resistive layers are deposited onto a ceramic substrate. Resistors can then be adjusted to tight tolerances of 0.1% using a computer-controlled laser trimmer.

Components ranging from transistors and diodes (typically 0.010 inch sq.), through to more complex custom integrated circuits are assembled onto the trimmed thick film substrate using an



Before...

adhesive which is silver loaded for good heat and electrical conduction.

Fine gold wire bonds are made between active components and tracks using an automatic wire bonder.

After assembly in a package each hybrid is electrically tested and environmentally screened to customer requirements.

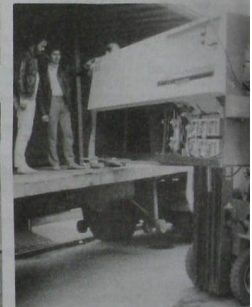
Typically a hybrid would be tested to:

- Temperature extremes -55° to +125°C
- Constant acceleration up to 5000g

The integrity of the package seals is also tested using a mass spectrometer to detect helium tracer gas. All hybrids are burnt in at the maximum expected operating temperature for 168 hours typically.



During...



In Transit

John unloads one of the larger bits of equipment.

### Environmental Controls

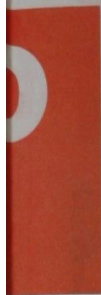
A clean room environment is required in order to ensure that dust particles are kept to a minimum. Clean rooms are graded dependent upon the number of particles of dust found in a cubic foot of air – the ISD Microsystems clean rooms are class 10,000 and class 100,000 respectively, with a class 100 print cabinet housed in the 'print and fire' area. This means that for each ft<sup>3</sup> of air there will be 100 or less particles of dust that are more than 50 microns in size!



...and after rebuilding This is the Test area fully completed...

[www.rochesteravionicarchives.co.uk](http://www.rochesteravionicarchives.co.uk)





**Stuart Inchmore**  
Manager  
ISD Microsystems



**Len Lubenko**  
Assistant Manager  
Quality Manager



**Lyn Barrett**  
Marketing  
Microsystems



**Len Martin**  
Design &  
Development



**Mike Aldington**  
Applications &  
Test



**Ross Bell**  
Production



...with the adjacent Assembly area which was the area first opened, and kept on working during the operation.

## F-16 Head Up Display

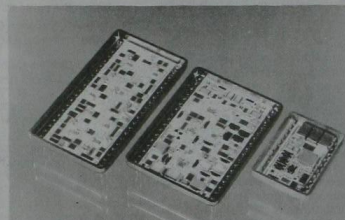
Since 1982 the department has been producing microcircuits for use in the F-16A/B and F-16C/D Head Up Displays which are produced in ADD. To date, some 4,000 of these 16 channel input hybrids have been produced in accordance with MIL-STD-883. The device consists of some 48 resistors, 16 capacitors, 32 transistors and diodes, together with 2 logic integrated circuits in a 30 pin 0.9 inch pitch package.



## Guidance Systems

The rate sensor hybrid has been produced for GSD since 1984 and is an integral part of the aiming and guidance system for a sea launched missile.

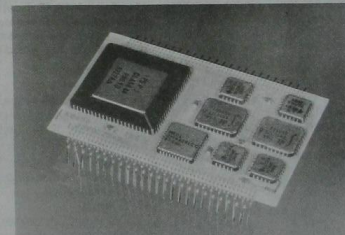
The hybrid controls the dual axis rate sensor unit and consists of 5 integrated circuits, with field effect transistors and associated passives. This device utilises precision trimmable resistors to adjust to the exact frequency desired.



## MIL-STD-1553 Remote Terminal Hybrid

This hybrid was designed and developed totally within ISD and is based on MEDL's latest 1553 chip, and an ADD design Interface Controller Chip.

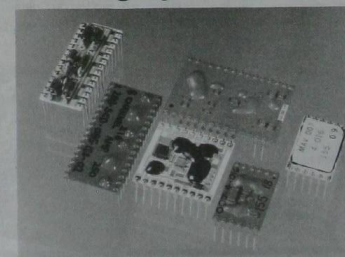
The hybrid meets all the requirements of the MIL-STD-1553B data bus, and only requires the addition of bus transformers, a dual transceiver, a 20MHz oscillator and a buffer to complete the 1553B interface.



## Hybrids for Recording Systems

This range of hybrids was specifically designed for use within a 42-track, high density digital data recorder which is used within the chemical industry.

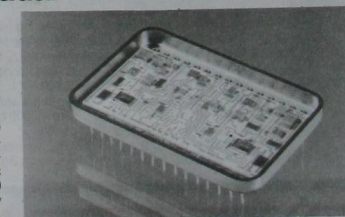
Due to the exacting constraints of these recorders, the hybrids employed are required to withstand 100 gravity shock loads, 5g gravity vibration levels and extremes of temperature and pressure of -25°C to +85°C and 1000 psi respectively.



## Foxhunter Radar

The 10 bit Digital-to-Analogue device is used in the Electronics Unit of the Foxhunter Radar on the Tornado Aircraft, and has been in production since 1984.

The hybrid consists of two precision Digital-to-Analogue chips, two Operational Amplifiers and 4 logic chips housed in a 30 pin 0.9 inch pitch hermetically sealed package.





# If music be the food of love — play on.

The original GEC Avionics Brass Band was formed in 1971 when 7 musicians from a very broad musical background met to share their interest in forming a Brass Band with particular emphasis towards charity work. The first meeting established that there was sufficient interest, drive and musicianship within the 'Magnificent 7' to form the nucleus of a band under the baton of its first conductor Bill Skinner, whose vision and dedication was an inspiration to us all.

Throughout the following years the interest flourished and the band grew in numbers and confidence. The financial problem of acquiring Instruments, Uniforms, Music, etc., which under normal circumstances would have prevented such an ambitious enterprise from coming to fruition, was presented to the management of the Company. The band was most fortunate and gained full sponsorship from the Company in recognition of the dedication and hard work given by them in supporting many functions organised by local charities.

Unfortunately in 1980 after a long bout of ill health Bill Skinner was forced to retire from the world of Brass Banding. In 1981 the band was again lucky in obtaining the services of Ian Walton (ATE Contracts Dept.). Under his baton the band prospered both in musicianship and presentation. During his 5 years as Musical Director the band gave numerous concerts in Kent and Essex and gained experience for the next step in their career, that of the world of 'Contesting'.

In 1986 Ian decided to retire from the world of Brass Banding to pursue his other musical interests. It was coincidental that at this time the Maidstone Trinity Band were undergoing a change and it was agreed that a trial marriage should take place.

A new Musical Director, Mr. Ted Clarke, MBE, was appointed and the honeymoon proved to be a great success. The amalgamated band registered as the GEC Avionics Brass Band with the British Amateur Brass Bands Association and entered the world of contesting.

Due to domestic circumstances, in January 1988 Ted was forced to retire but fortune favours the brave and our then principal cornet player, Keith Woodger, took over the baton, in his words "in a caretaker capacity".

On Sunday 26th April 1988 the dawn was clear but chilly. At 06.00 hours the security guards in the

Towers car park witnessed an awesome sight as 32 half conscious, ashen faced bandsmen struggled on to a coach, destination the Brighton Dome to participate in the Southern Counties Amateur Bands Association Annual Spring Contest.

What a difference a day makes!! That evening the coach returned to the Towers car park overflowing with smiling faces to the strains of 'Hail the Conquering Hero'.

**Winners of two cups**  
**Thomas Cooper Challenge Cup**  
 2nd place in the Fourth Section in the contest.

**'Hawks Challenge Cup'**  
 Winner of the best March.

The writer admits that when the adjudicator gave his result it was music to his ears, after 17 years his dreams had become reality, the 'Magnificent Seven' had become a fully fledged band.

Keith Woodger has now accepted the post of full time Musical Director and under his leadership the band looks to the future with confidence and hopes to build upon its recent success, in the Folkestone Open Contest in October 1988 and the Nationals at Watford later in the year.

**The band practices every Monday at 19.45 hours in the main canteen. It welcomes all those who are interested and dedicated to the world of brass banding.**

*The band acknowledges all the help it has received over the years and takes this opportunity to thank the following:—*

GA/Management  
 GA/BP Social Club  
 Canteen Staff  
 Security  
 Transport Department  
 Photographic/Reprographic Department  
 AS&R Technical Publications  
 Works Engineering Services  
 Audio Visual Unit

**Martin Polley**  
 Chairman

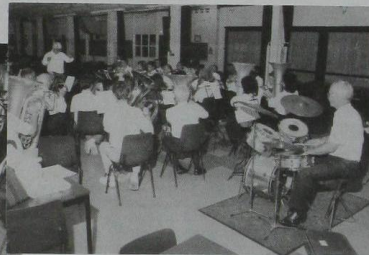
**STOP PRESS**  
**FOLKESTONE OPEN CONTEST**  
 • 1st PRIZE IN SECTION IV (9 BANDS)  
 • BEST SOLOIST IN SECTION IV  
 • BEST PLAYED HYMN



The GEC Avionics Brass Band with their Musical Director Keith Woodger and Chairman Martin Polley.



Principal Cornet player Ian Lanceley, leading a very powerful cornet section — comprising Solo, Soprano, Repiano, Flugel, 2nd and 3rd Cornets. Perfect timing and tuning is all important to create a rich, round sound.



Percussionist Barry Knight keeping one eye on the music and the other on the baton of the conductor. Not so easy with the 'powerhouse' Bass section directly in front of you.



The centre of the band is controlled by the melodic Horns and Baritones.



The all important blend of power with harmony is provided by the Euphoniums and Trombones.

## Potted History of Brass Banding

- Had its roots in the early nineteenth century when it was predominantly a working class musical activity.
- First recorded contest 1821.
- Brought to prominence at the Great Industrial Exhibition of 1851 held at the Crystal Palace in Hyde Park.
- First contest held at the Crystal Palace July 1860. 170 Bands entered. The winners being Black Dyke.
- Contesting regulations as we know them today were laid down in 1889.
- In the 1890's there were over 50 firms manufacturing brass band instruments.
- By 1895 it was estimated that there were 40,000 brass bands in the country.
- Many wonder what is the difference between a Brass Band and a Silver

Band. It is purely 'Cosmetic'. It is generally accepted that there is no technical or sound difference. As economic and social circumstances improved, bands were able to afford to have the brass instruments 'Silver Plated' which improved appearances and made the instruments easier to keep clean.



The 'Thomas Cooper Challenge Cup' and 'Hawks Challenge Cup', also certificates presented by the Southern Counties Amateur Bands Association.



# 25 years' service

Six on the Same Day in ADD = 150 years.



The anniversaries were celebrated together of three consecutive days in 1963, for Reg Bushell, Martin Oliver, Jim Beaney, and Dave Porter (standing), with Derrick Jenner and George Bull (seated).

**Reg Bushell**, Project Controller, started in ACD (now MASD) as progress Chaser, later moving to IND (GSD), but has been in ADD since 1972. There he worked in Engineering Stores, then the Model Shop (planning and progress), and five years later, looking for a change, he moved into Project Administration. There, he has worked on Tornado, A-7, and Lantirn projects and more recently on Chinese and Middle Eastern contracts. Currently he is on F-5 and F-8 work. At home with his family, Reg is interested in model making, fund raising for the Scouts, and is also a keen cyclist and motor cycle enthusiast.

**Martin Oliver**, following a successful apprenticeship, joined ADD as a Technical Assistant in 1968, then transferred to IND in 1970. There he worked on the Jaguar Nav-attack system, and was promoted to Development Engineer in 1973. ADD meanwhile was busily engaged on F-16 HUD work, and in 1975 Martin transferred back to the division to work on F-16. Further promotion occurred in 1977 when Martin was made Project Engineer following his efforts on the F-16 EU. Shortly after that Martin's association with the Tornado projects began, and in 1980 he became our on-site representative at BAe Warton, for warranty repairs and on-call support to Germany. He returned to Rochester in 1983, carrying on working on the Tornado projects and was made Project Leader. He has continued in that role since then.

Martin, with his wife and two sons, has spent a lot of time on the hobby of keeping fish both indoors and outside, having also built a number of fishponds and other garden features at his home.

**Jim Beaney**, Section Leader in the DO, also did his apprenticeship here, first joining a division which promptly moved to Borehamwood. This later became ACD, the forerunner of MASD, and after a period of weekly commuting Jim came back to Rochester with ACD who then moved in at New Road. In 1972 ADD's DO borrowed some space at New Road – and Jim; when ADD came back to the main site he came too. Since then, he has become a leading exponent of PCB design and liaison between ADD and manufacturers. As Section Leader he controlled the Quest CAD system from its initial installation, and has also been very involved with Applicon.

Jim is also a fine all-round sportsman. In no particular order, he rows for Medway Towns Rowing Club (and has been their Secretary for 6 years), and in 1972 participated in Henley Regatta. He has played Rugby for a couple of seasons, and his cycling activities are well known both as time triallist with Medway Velo Club and as organiser and unbeaten participant in the ADD Cycle Race. He also organises the ADD Superjerks contest. As a Marathon runner, Jim has competed in the first London Marathon and four others, to a total of fifteen – his best time is 2hrs 55min. And he still has time for gardening!

**Dave Porter**, Foreman, first joined Elliotts as a Tester after completing a Dockyard apprenticeship, and stayed 2 weeks! However he came back in 1963 as prototype wireman in Radar Division, and the division promptly closed down. Things went better in ISD (FID) and from 1969 when he moved to ADD as prototype wireman, by 1977 Dave had become Leading Hand and he has been Foreman since 1980. He has contributed to many of ADD's big programmes and has just taken up a post as Methods Engineer.

Dave enjoys dancing, cycling, and badminton; one of his 3 children, Franzine, works in ATED as a VDU Operator.

**Derrick Jenner**, Model Shop Employee, did his apprenticeship in the paper mills and then 5 years in the RAF where he qualified as Instrument Mechanic and Instrument Filter. Then after time in a motorcycle shop and the CECB, he joined Elliotts in AS&RD to work on Fuel Flow Meters, then went to Fuze Division as chargehand electronic wireman, until the division moved away. Thus, in 1971, Derrick joined ADD, where he has been a valuable member of the Model Shop prototype wiring team, contributing to many important programmes.

At home with his wife and 3 children, he enjoys DIY, car repairs, and model making in wood.

**George (GC) Bull** joined the Company as a student apprentice and is one of a large number of people in prominent positions throughout the Company who have started their careers in this way and seen significant career development within the company.

George first achieved engineering status in 1967 when he was appointed as Development Engineer in FARL. There he worked on raster technology and gained promotion to Project Engineer in 1971. When ADD won a contract to convert the first A-7 HUDs to be able to display FLIR imagery, George transferred from the Lab to ADD to work on what was known as A-7 TRAM. This episode is one of a number of examples of how innovative technology development has been transferred to successful business by good interaction between FARL and ADD. George is also one of a number of people who have transitioned from FARL into ADD and made significant contributions to the Division.

The TRAM project was technically very demanding, with additions within the existing production display unit. The initial flight trials were successful and led to production systems. George's role in the program was recognised and he was promoted to Project Leader at the end of 1972.

He subsequently worked on Tornado, becoming Project Manager in 1977. In more recent years, George has led the Division's development of CRT based Helmet displays and managed the Falcon Eye project, in which the ADD Helmet display with associated processing and symbol generation has been flown in an F-16 displaying FLIR imagery from a

steerable FLIR sensor following the pilot's line of sight.

With the recent departmental reorganisation, George is now assisting to lead the Displays group which is responsible for development of all ADD's new displays – Head Up, Helmet mounted and Flat Panel displays. His early enthusiasm for things engineering has blossomed and continues unabated.

Cars and boats have figured prominently in his outside interests, together with active participation in village life and affairs. He married Sarah about five years ago. He has just about finished a house-rebuilding exercise, and he and Sarah now have 2 young children.

## MASD

**Tony Baker**, Commercial Manager in MASD, started his career in 1951 with Swift and Swallow on this site, as Cost Clerk, but left that Elliott company. He returned to the fold in 1963 in Fuze Division Cost and Budget, becoming Commercial Manager in 1971. When Fuze moved away Tony went to ADD for a time, then in 1972 he was appointed Commercial Manager in Airborne Computing Division which in due course became MASD.



Tony was congratulated by a succession of his Divisional Managers; Alan Gallagher (L) was joined by Paul Rayner, Bob Wilkinson and Laurie Hampson. Dave Clews, not present, sent a message from the USA.

## AS&RD

Accompanied by his wife Rosa, a nurse at All Saints' Baby Unit, **Dave Harris** of AS&RD received a presentation camera and accessories from Production Manager Ken Rhodes.

Dave was a Chatham Dockyard apprentice, who then joined the Merchant Navy. In 1962 he came to this company as Electrical Instrument

'Basher', and has spent all the time since in AS&R except for 3 months with BP – hence 25 years is now after he rejoined in '63. As Quality Technician, Dave worked on all production areas in AS&R, and has been the division's longest serving Foreman, 14 years. It was February this year when he was made Senior Estimator, Repairs.

## ATED

After starting in TACD as Mechanical Inspector, **Tris West** took up training as a Draughtsman a year later, and by 1970 had reached the position of Checker Draughtsman, carrying this on through the amalgamation of divisions into FCD in the same year. From 1973 he spent over seven years in Quality Assurance, and in 1980 moved to ATED, his present division, as Drawing Office Section Leader.

Apart from being a keen sailor and member of the Yacht Club, Tris has occasional adventures including a recent house move. Notes received quote "he collected a large cupboard on top of his Ford Escort. The cupboard fell off while cornering and broke up (apparently it is repairable)".

The note does not say whether that refers to the cupboard or the car.



Arthur Colwell hands over Tris's camera. (A)

ATED Planner **Leigh Garton** came out of his apprenticeship into ISD (now Model Shop as Technician, staying there for 17 years. Then in 1980 he moved to ATE as Trainee Planner, and has recently been promoted to Senior Planner status.

And in between times, Leigh goes caravanning – he promoted himself from trailer tenting after becoming expert in pitching the tent just where moles burrow up in the middle of the night.



Here Leigh receives his presentation camera from Arthur Colwell. (B)

## OBITUARY

**Harry Kemsley died suddenly on 18th July. He was Section Leader in ADD Engineering Stores and had been with the Company since 1986.**

**Gordon Nisbet-Evans, Project Manager in ADD Engineering, died after a long illness on 15th September. Mr. Evans had been with GEC from 1954 to 1971 and from 1972 to 1988.**

**Jim Walker, Product Assurance Manager of CMS, died on 29th September at home following a long illness. Mr. Walker had been with the Company since 1964.**

## INTER-DIVISIONAL CRICKET REPORT

The 1988 Season was completed when ATED (Finalists in 1986 but never winners previously) ran out winners against FCD (previous winner on two occasions) in the 20-over final of the Interdivisional tournament at Hoo on 16 August.

Despite a wet and extremely inclement Summer, little

Continued overleaf

## Results

Plate Competition				Trophy Competition			
Final	Semi-Finals	2nd Round Matches	Initial League Teams and 1st Round Matches	2nd Round Matches	Semi-Finals	Final	
		CACD Eng v ISD Prod	FCD v CACD Eng AS&RD v ISD Prod	FCD v AS&RD	FCD		
		GSD Eng v GSD Prod	GSD Eng v GSD Prod	CACD Prod v MASD		FCD	
		FARL v Training	FARL v Accounts BP	Accounts v BP			
		PSD v PSD	CSD v PSD ATED v ADD CACD B'	ATED v ADD Training v ADD			
							ATED



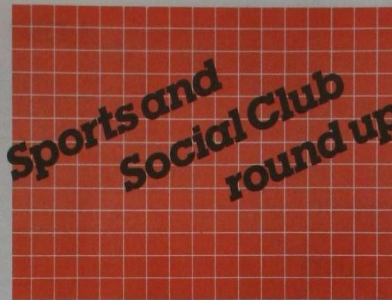
Continuation from Page 7

scheduled play had been lost since (on 17 May) FCD had played one of two CACD Engineering teams in the first of these tournament games. 17 Teams entered the league, including Engineers from AS&RD, GSD, MASD, CSD, PSD, and ADD. Production departments of ISD, CACD, GSD, were represented with Central Services fielding FARL and Accounts representatives, and a team from Training mainly Instructors and Supervisors.

First round matches singled out those teams competing for the trophy and those playing off for the Plate.

The Plate final was contested on 11 August by PSD and CACD Engineering, PSD emerging as winners. The winning team was as follows:

Keith Washington (Capt.)  
Peter Thomas (W.Keeper)  
Barry Davis  
Pete Elsdon  
Andy Gutsell  
Jason Isaac-Henry  
Dave Morgan  
Ian Rose  
Nigel Stevenson  
Andy Thomas  
Tony Youren  
Umpire Dave Pritchard  
12th Man Shash Patel



**GEC AVIONICS/BP KENT SOCIAL CLUB, HOO**

**7th Annual General Meeting**

Thursday, 16 February 1989 at 8 pm



**NOVEMBER**

Friday 18th  
**BOWLS SECTION DINNER DANCE**  
7.30 - midnight  
Dinner: 7.30 pm

Saturday 19th  
**PARLOUR DERBY**  
8 pm

Friday 25th  
**ATHLETICS SECTION DINNER DANCE with "ADA'S 60s" REVUE**  
Tickets: £8

Saturday 26th  
**BARN DANCE with "JEZREELS"**  
7.45 - 11.45 pm

**DECEMBER**  
Friday 2nd  
**SUB AQUA CHRISTMAS DISCO with "STATE LINE"**  
Tickets: £1.50  
7.45 - 11.45 pm

Saturday 3rd  
**PARLOUR DERBY**  
8 pm

Friday 9th  
**MUSIC IN THE BAR with "FRENCH KISSES"**  
8 pm

Saturday 10th  
**OLD TIME MUSIC HALL**  
Curtain 8 pm  
Admission Free by ticket only

Friday 16th  
**PSD CHRISTMAS DANCE with "HAPPY DAZE"**  
Tickets: £3

Saturday 17th  
**FCD CHRISTMAS DANCE with "HAPPY DAZE"**

Friday 23rd  
**MUSIC IN THE BAR JOANNE ASHLEY**



Saturday 24th  
**CHRISTMAS EVE DANCE "TANGENT"**  
7.45 - 11.45 pm

Saturday 31st  
**NEW YEARS EVE DANCE "SPIRAL"**

The Management Committee has agreed to make 100 tickets available for guests at £2 each, for New Year's Eve. Requests for tickets should be made, in writing, to the Secretary's Office.

**GA/VP KENT CLUB**

**ELECTION 1989**

Nomination for Ordinary Member of the MANAGEMENT COMMITTEE (four vacant seats for GA/VP employees)

Candidate's Name (please print)

Club No.:

Date:

Proposer's Signature

Club No.:

Secunder's Signature

Club No.:

This Nomination paper is issued subject to Clause 5(x)(v) of the Constitution and Rule 3 of the Constitution and Rule 3 of the Nomination Papers must reach the Club Secretary by 31 December 1988

**GA/VP Kent Club Swimming Section ANNUAL GALA/ SPLASH AND DISCO**

The Swimming Section invites children of ALL Club Members to a Swimming Gala, Splash and Disco to be held at the GA/VP CLUB POOL on Saturday 7 January 1989

A party tea will be provided and Father Christmas is expected to present a small gift to all Gala and Splash Entrants. The Gala will start at 2.30 pm (All entrants report at 2 pm). The Splash will start at 2.30 pm. The Splash is for young or inexperienced swimmers who can swim two widths (very young with ambands if required) or one length. The tea, Prizegiving and Disco will be held in the Club Ballroom. Tea from about 5.30 pm. Prizegiving from about 6 pm and Disco from 7 pm until 10 pm.

**AGE GROUPS (Age at 7 January 1989)**

- SPLASH** - Boys and Girls of any age 2 widths or 1 length
- Group 1** - Boys and Girls under 10 1 length (25 yards)
- Group 2** - Boys and Girls 11 & 12 2 lengths (50 yards)
- Group 3** - Boys and Girls 13 & 14 2 lengths (50 yards)
- Group 4** - Boys and Girls 15 & 16 2 lengths (50 yards)

**Annual Gala Splash & Disco Entry Form**

**Children's Annual Gala/Splash & Disco**

on Saturday 7 January 1989

Please enter my child in the following events:  
Breaststroke  Backstroke  Freestyle   
Splash (two widths)  Splash (one length)

Child's Surname .....

Christian Name .....

Date of Birth .....

Signed .....

Date .....

Address .....

Tel. No. (Home) .....

(Work) .....

Please send entry forms to Dave Jibb, ADD Engineering or Cyril Moffett, PSD Production.

Further Information Contact:

Dave Jibb, ADD, 3907 Cyril Moffett, PSD, 4241

**REAPER CLUB**

Since our last report, much has been going on. Besides the regular meetings each third Tuesday in the month, when the entertainments have been varied, and as usual. Well presented, and enjoyed, the September entertainment was a very talented "One Man Show", by BILLY, and took the place of the usual Cake Competition.

Our outing to Worthing took place in brilliant sunshine and warmth.

We had a successful trip to Ramsgate to an "Olde Tyme Music Hall" show, besides a Social Evening in the Canteen, and a guided tour of part of the works, organised by Harry Staff.

We are now looking forward to the Christmas Dinner and Party Time.

**CHESS PROBLEM SOLUTION**

**HALF-PIN DEMONSTRATION**

Key 1 Bg5! (threat 2 Sf6 mate)  
1... Kh5 2 Sf6 mate  
1... Sh5 2 Qxe6 mate  
1... Bf5 2 Qe2 mate  
1... Sxg5 2 Qxg5 mate

The idea of this problem has proved to be one of the most fruitful in the history of problem chess. It shows the half-pin theme in its basic form of two Black pieces (here, the Bishop and Knight f4) between the Black King and a White in-moving piece (the White Rook a4). For the half-pin to be complete, each Black piece must move off the line, and there must be a mate dependent on the piece remaining on the half-pin line being fully pinned. After 1... Sh5 the Bishop e4 is left pinned, and 2 Qxe6 is mate; after 1... Bf5 the Knight is pinned, and 2 Qe2 is mate.

1	2	3	4	5	6	7
8				9		
11			12			
	13	14	15	16		
17			18			
19			20			22
23	24			25		
27			28			
29						

**Crossword No. 93**

For amusement only

**ACROSS**

1. How a doctor tries to look important. (3-2-3-4-3)
8. Art of avoiding rashness. (8)
9. An earwig perhaps. (6)
11. Above, on top. (4)
12. Hot air without wires (5-5)
13. Going on a journey? Take one. (4)
15. No credit, so don't try. Pay up. (4-4)
19. Agitator's success. (8)
20. Its the \_\_\_\_\_ of life. (5)
23. An open space deeply embedded. (6-4)
25. May be green out of leather. (4)
27. Internal matter or thing. (6)
29. Not anywhere near the real thing. (3-2-1-4-5)

**DOWN**

- 1 & 17. The man usually does on bended knee, not anymore? (3-3-8)

2. A minor or near teenager. (9)
3. To eat an orange, maybe. (4)
4. Pleasant to good manners. (6)
5. Deeds of properly prove it. (9)
6. The staff of life. (5)
7. Be on the move. (3-5)
10. Destructive and deadly. (5)
14. The reliance insurance gives. (9)
16. Group of musicians under conductor. (9)
18. An opening or where you go in. (5)
21. The use of computer is the \_\_\_\_\_ way. (6)
22. A nude person on his own. (6)
24. Cat prices and cartel will rage. (5)
26. Blush white metallic element. (4)

**Solution to Crossword No. 91**

**Across**

1. The Lost Chord; 10. Pound; 11. Altermath; 12. Retriever; 13. My All; 14. Dopey; 15. Scarily; 16. Guy Ropes; 20. Toledo; 23. Nonet; 24. Enrolment; 26. Uttermost; 27. Gavel; 28. Happy Landing.

**Down**

2. Haut; 3. Luddite; 4. Starve; 5. Cataract; 6. Darman; 7. Dramatize; 8. Spark of Genius; 9. Chilly Mortals; 15. Pay Snatch; 17. Cemetery; 19. Outcrop; 21. Obligated; 22. Gretna; 25. Elvin.

**Solution to Crossword No. 92**

1. Havensack; 2. Arose; 3. Press; 10. Club-heads; 11. Tapered; 12. Kenish; 14. Eliminated; 15. Enn; 16. Into; 19. Spoil-sport; 23. Eleanor; 25. Trample; 26. Reichstag; 27. Anta; 28. Stream; 29. Carpenter.

**Down**

1. Hypothesize (six); 2. Viewpoint; 3. Restrain; 4. Arcadia; 5. Knocks; 6. Aching; 7. Claws; 8. Erms; 13. Hold the baby; 16. Moonpool; 17. Escapade; 20. Public; 21. Integer; 22. Anthem; 24. Elite; 26. Rib.

Photographs taken by the Staff Photographers are acknowledged in the following way: (A) Alan Keats; (B) Ian Douglas

The views and opinions expressed by contributors are not necessarily those of the Editor or Company. Any such opinions or comments are those of the contributor alone and are printed solely as a matter of interest.

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