

No. 42/82

MARCONI AVIONICS NEWS

House Journal of Marconi Avionics Limited

MOTTO FOR THE MONTH

'Gather ye rosebuds, while ye may' - R. Herring.

Progressing

To keep in the forefront of avionic systems business is a challenging role to fulfil.

To move forward, by introducing new ideas, new concepts, and improved systems is the goal of the company, and to command the attention and goodwill of customers and potential customers. To achieve these aims will ensure expansion and the continued deployment of resources of manpower and materials to their fullest extent.

At the 1982 Farnborough Air Show Marconi Avionics took full advantage of this opportunity to show its wares, and to meet those people who make decisions and influence them by 'showing our products'.

There were first details of new programmes:—

- P110 Agile combat aircraft avionics.
- AM/X 'Fly by wire' systems.
- CF-18 Engine test system.

FIRST details of new products, including SKYRANGER new airborne ranging radar. MOSAIC lightweight ASW mission system. HISOS new ASW system, launched with Plessey Marine. MAVHRS heading reference for land vehicles. STRAPDOWN altitude and heading reference.

LATEST progress details of major avionics programmes:— TICM thermal imaging common modules production. STANDARD central air data computer system. LANTIRN head up display. Head up display production. Helicopter air data systems.

A few details of NEW PRODUCTS.

SKYRANGER—A new lightweight ranging radar, of simple low cost design, now in production for fitting to a variety of military aircraft, to enhance the air-to-air combat capabilities.

AI RADAR—A variant of the 'Foxhunter' radar in production for RAF Tornado F2 aircraft. This is an advanced pulse doppler system for air-to-air and air-to-ground operations, developed for the P110 project.

'CATS' EYES' NIGHT VISION AID—An extension to Marconi Avionics considerable range of night vision systems, new 'Cats' Eyes are a range of goggles incorporating new concepts, based on head up displays.

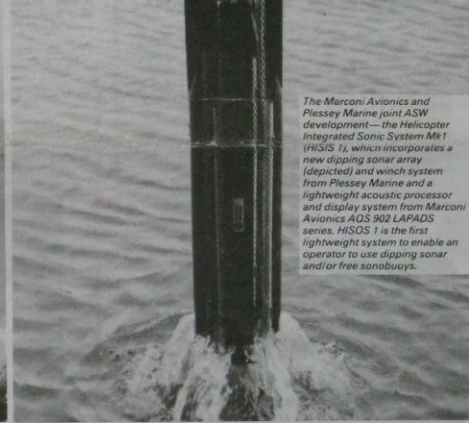
The Agile Combat Aircraft (ACA).



Marconi Avionics new 'Cats' Eyes—more versatile than ordinary night vision goggles.

The first demonstrations to potential customers of a unique night vision development, by Marconi Avionics Limited, took place at the Farnborough '82 Air Show.

'Cats' Eyes, intended for use in helicopters and by other aircrew, as well as more generally, makes use of techniques proven in head up displays, to overcome the limitations inherent in conventional night goggle designs.



The Marconi Avionics and Plessey Marine joint ASW development—the Helicopter Integrated Sonic System Mk1 (HISIS 1), which incorporates a new dipping sonar array (depicted) and winch system from Plessey Marine and a lightweight acoustic processor and display system from Marconi Avionics AOS 902 LAPADS series. HISOS 1 is the first lightweight system to enable an operator to use dipping sonar and/or free sonobuoys.



F-16 flies with new Lantirn HUD.

First picture to be released by Marconi Avionics, by courtesy of General Dynamics Corporation and the United States Air Force, clearly shows the LANTIRN head up display in flight, during its flight test programme which is now under way at Edwards AFB California. The front pilot is operating with the new Marconi Avionics HUD, whilst the rear seat pilot monitors the same information on his head-down display. The LANTIRN wide-angle HUD is the first system based on holograms to be developed for full scale production.

Our 5th Birthday

With this issue we conclude our 5th year of publication, and can, to some extent take pride in the achievement. When we began publishing in October 1977, there were many sceptics around, who thought it would 'go the way of all flesh', and vanish just as quickly as it had burst upon us.

How wrong can one be?

We admit however, we have many failings, have made some blunders and gone away at times, but what 5 year old does not do the same?

There has been some successes, and some pleasure, we have been able to 'keep the family' informed, high lighted special items, ensured that all employees knew of developments and plans that concerned us all. We hope we have earned the loyalty of personnel and this is shown by the interest which is growing and the query as to where the next issue will appear, together with remorse when the copies cannot be obtained.

During the past months there has been signs that more and more people are aware of its potential, and we hope this will continue apace. It is a real shame, vehicle for the dissemination of news, facts and ideas. To buy or sell, to share and share alike. It has been stated before that to make it a success we need the co-operation and assistance of the entire workforce, from Divisional Managers downwards, to the most humble jobber in the company.

Besides our failures, successes and achievements there has been 'mystery' and other emotions, including one of mystery! How can we have a parcel of 600 copies of the Marconi Avionics News, all tied up and clearly labelled?

Yet this happened to the ATE copies of edition 43.

Has anybody seen the missing 'bundle'? We would like to know. And what of the future. More people are required to keep us informed of what is happening among our 6,000 fellow workers. Contributors sharing thoughts and ideas are always welcomed. Stories of interest.

It is probable that a new mind, and a new hand will be at the helm when the 6th Anniversary comes round. So rally round now, and make this your company newspaper, and enjoy the benefits of our mutual concern.

Marconi Avionics News
Editorial Office
Portakabin 3
Airport Works
Rochester, Kent
 Tel: 44400 ext. 408
 (int. 2731)

Editor: *Jess Griffiths BEM*

Liaison Officers:

Lynn Roberts, Atlanta, USA
Gerry Rick, Nalisse
Beryl Downie, Accounts
Vic Hayward AS & RD
Sid Goulding, CACT/CD
Fergus Maloney, FARL (New Road) *John Garstin, IN*
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Erik Loft (Calibration) and John Brambleby, GYRO
 Other are required for: *CGD, RAS, GMS.*

Volunteers should offer their services through Divisional Administration Officers or direct to the Editor



In lighter vein

The Arrival of the Snooker Table

The annual screening on television of the World Geometry Championship with all the old favourites such as Fred Davis, Ray Reardon and Graham Miles along with a few new upstarts from the former colonies who are probably nice enough people but have names such as Kirk and Perry, must result in the youngsters in many families pressuring Dad into buying a snooker table.

In my youth people didn't readily admit to playing billiards, the actual venue for such events was often a rather seedy hall over the local Burtons, the doorway guarded by sallow looking types with half smoked Woodbine's in one corner of their mouth, a place known to be frequented by highly undesirable types and local professional footballers who should have been training.

However, television and that clean cut young man from Romford, Steve Davis, have changed all that. Today's players seem reasonably respectable and extremely well paid.

Most parents with their memories of mis-spent youth don't need much persuading before the Saturday morning trek around the local sports shops results in a brand new table being fixed to the roof rack and driven home.

The next step is to regret not having bought a stand, but don't despair, refer to my article on kitchen shelves, the principle of construction for a stand is much the same.

At last the balls are set up and junior, who has informed all the kids in the street beforehand of the impending arrival of his new possession is ready to break. A look of horror as he goes in—off, four to me, not likely, I'll start again. This time it's OK.

You are now in a position to demonstrate once again your vast superiority over this fledgeling player. Unfortunately he has left the cue ball against the cushion and the only way that you can play it is by moving the piano or coming off the cushion and back across the table, still, they make it look easy on telly. This is when you find that cheap tables suffer from what is known as 'Brunger's Drift', that is when a ball is played slowly it tends to wander off course.

The first few games should always be won by the parent—the kids give away too many points through foul shots. As they practice among themselves, these same children become very efficient small table players and it is as well, after a while, to have an excuse not to play them when there is an audience, it can be very embarrassing, forty eight to five doesn't do much for the ego or your standing when all their friends are there. Much better to have a couple of frames with other parents really—if their children don't have a table you might be in with a chance.

John B.

PRIZE PUZZLE

A five pound note awaits the sender of the correct solution to the puzzle given below, which is drawn out of the bag, after closing date. For those who remember the good old days before decimalisation (pre 1971), and understand E. s. d., (pounds shillings and pence), decipher the following 'bill'.

- A Ruler
- A Pig
- North and South Poles
- Leather
- Sovereigns' Head-gear
- Loose horses are put in one
- Hair do (old style)
- A singer
- Old cycle
- A stone

E. s. p.

£27 7 7½

Send entries, with name, address and division /dept., to:
 Editor, M.Av News,
 Portakabin No. 4,
 Airport Works,
 Rochester, Kent,
 to arrive by 1st November 1982.

To all people living in Lordswood or Walderslade village

Probably many of you are not aware of an organisation called 'Soap Box'. Well, it's for Senior Citizens! On the last Friday of each month, we are looking for volunteers to drive 3 Senior Citizens from their homes and take them to the church in Walderslade village for 7.30 pm and pick them up at 9.30 pm to take them home.

It is not a lot to ask, about 20 minutes of your time, and the Senior Citizens are very grateful for their night out. So, please if anybody can help, ring Pauline Turner on 2519. Those of you who don't know me, I am the Senior Rep. of APEX.

Letter to the editor

2 Corkwell Street
 Chatham

I would be glad if you would pass on to the management of Marconi Avionics Ltd, grateful thanks from myself, and all the other personnel who enjoyed the trip to Farnborough Air Show.

It was a very enjoyable day, and enhanced by the superb arrangements for our comfort, and pleasure.

To all concerned, in any way, with the effort.
 'Many Thanks'.

Mrs V. Harris,
 Transport.

CASTAWAY

Our selection for the position of Castaway, this month is Mr. Les Prettyjohn, the Materials Controller of ATE. An employee of longstanding, he has been in various divisions and held many supervisory posts—always cheerful, and a real live wire.

His choice of Music is
 Further time out by Dave Brubeck
 Equinox by Jean-Michel Jarre
 Feelings by Cleo Lane
 Sheer Magic by Acka Bilk
 Wives and Lovers by Stan Getz
 Architective and Morality by Orchestral Manouevres in the Dark

For books he selects
 The Ancient Mariner by Monsarrat
 Snow Goose by Paul Gallico
 Night Runner of Bengal by John Masters

Marriages

Our congratulations are extended to the newly weds, detailed below.

Barry Ede, of PSD Inspection was married to Ann Page, a Time Clerk in ISD on 28 August at the Church of St. Philip and St. James in Weedswood.



Barry Ede and Mr A. R. Kennet in happy mood.

Philip Wellard, a former apprentice, and now in the Test Dept of PSD was married to Miss Jeanette Beer, a secretary with FACIT, at St. Alban's Church, Robin Hood Lane, Bluebell Hill.



Phil Wellard and Mr M. Meakin.

Miss Karen Stirling of Personnel Department, who married Mr. Roland Brown a CAV employee at St. Margaret's Church, Rainham on 11 September 1982.

Miss Jennifer Griffiths of PSD Stock Control, and formerly on Marconi Switchboard, who married John Boswell, at the United Reform Church, Gillingham on 11 September. Jennifer enjoys netball, tennis, swimming and hang gliding to

sap her energies—but will now have to find reserves of energy to make a good job of married life.

Julian Watts, an estimator in MASD and Miss Julie Bryant entered upon matrimony on 4 September 1982 at the St. Stephen's Church, Chatham.

Malcolm Irvine of FCD Inspection Department, married Miss Kim Ellis, of the Inland Revenue Staff, at Chatham Registry office on Friday 3 September.

On behalf of colleagues and friends Mr. H. A. Corthorn presented Malcolm with a steam iron.



Malcolm Irvine receiving his gift from H. A. Corthorn.

Congratulations

We offer sincere congratulations to Sharon Osbourne, of PSD Progress Department, on reaching her majority year of 21. She was flooded with good wishes from colleagues and friends, and showered with presents.

Congratulations

Success at last! The 3rd year apprentices are pleased to announce that after much seeking Mr P. Barrett of ATE, and Miss L. Fosberry of ADD, have finally acquired a yacht—'TARA' of Buccaneer class. They have joined the Marconi-BP Sailing Club, and are wished fair winds and a safe land fall.

The comment from 3rd year 'May all their sails be windy ones!'

The LANTIRN Head-Up Display

by G. R. Sleight

(LANTIRN is a USAF acronym for LOW ALTITUDE NAVIGATION and TARGETTING by INFRA RED at NIGHT).

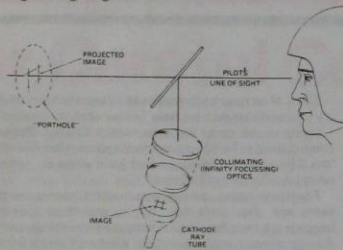
Extending current technology

To put into their proper perspective the advances which we have made in holographic Head-Up Displays (HUD), for this programme, I would like to spend a few moments describing current technology HUD systems.

A HUD is, of course, an equipment which projects images into a pilot's line of sight. The forerunner of today's equipment, in which high brightness cathode ray tubes are used to generate the image, was the HUD developed by the Company and the UK Ministry of Defence for the Buccaneer aircraft, in 1960. Aircraft and HUD are both still doing yeoman service.

Using a CRT to generate the images makes it possible to provide the pilot with a comprehensive set of information regarding height, speed, heading, altitude and so on. Additionally, as the HUD image is collimated (focused at infinity), information cues on it can be space stabilized. In other words the HUD, alone, of all an aircraft's instruments, can provide the pilot with cues (such as an artificial horizon, for example) which overlay and relate directly to his view of the real world. This can make low-level flying safer, by showing the pilot at all times an indication of his actual flight path vector. With this he can immediately appreciate exactly where the aircraft is going and whether it will clear the terrain ahead. The extension of this technique for weapon aiming purposes is obvious.

To extend the capability of existing NATO aircraft, to enable them to operate more effectively beyond the hours of daylight, various programmes have been sponsored by the United States and United Kingdom governments. They have also been the subject of significant private venture investment by our own Company. They have explored the use of various forward-looking sensors such as low-light TV (LLTV) and forward-looking infra-red (FLIR). It has been found that by providing the FLIR or LLTV image on the HUD at a scaling of 1:1 with the real world (synthesized information co-incident with the real world) the pilot can have restored to him much of his normal daylight freedom to 'see to fly'. There is, however, still the need to have all information (height, speed, altitude etc.) which HUDs normally provide, superimposed on his FLIR picture and, equally important, for the FLIR picture to make visible a large enough segment of the outside world.



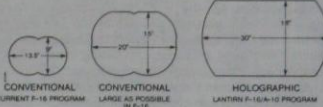
Principles of Operations Head Up Display

How much of the outside world the pilot sees depends on the 'field of view' of the HUD. All HUD systems have a field of view which is limited, the so-called 'port-hole' effect, by the final lens element in the collimating optical system. The angular field of view (FOV) is very simply a geometric function of the size of this lens and the distance of the lens from the pilot's eye—the bigger the lens and shorter the distance (two incompatible parameters with normal HUDs) the bigger the FOV. To get a feel for the effect of FOV I do not believe any of us would feel free (or indeed safe) to drive around Hyde Park Corner with our normal panache if we had blanked off side windows, a shattered windscreen and only a small area ahead of us as the clear vision panel. Yet this is exactly the kind of feat we would be expecting fighter pilots to achieve with a restricted field of view.

Quest for field of view

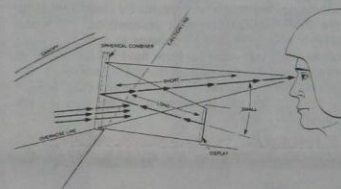
One of the key aspects of the LANTIRN HUD programme has been the achievement of a large field of view. The target we were set was 30 degrees in azimuth and 20 degrees in elevation. The HUD system has to

achieve its required functions whilst still conforming to a very specific set of constraints. It must not infringe the pilot's view over the nose of the aircraft, nor protrude aft of the safety line required for pilot ejection. It must fill up only a very modest area of the total instrument panel (which as you will see, for an aircraft like the F-16, is very small anyhow) and last, and most obvious of all, every part of the optical system including combiner elements must stay within the confines set by the windscreen.



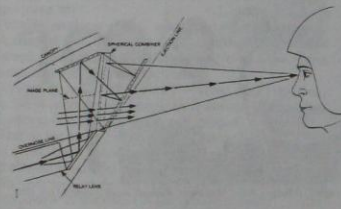
Fields of View achievable for F-16 using Reflective and Diffractive Optics

To enlarge the field of view of the standard F-16 HUD Marconi Avionics had, in advance of the LANTIRN Programme, designed a special HUD for the 'Advanced Fighter Technology Integrator' (AFTI) version of the F-16. This uses a relatively conventional optical system, about 30% larger than the standard production unit and coupled with some other improvements, provided a field of view of about 20 by 15 degrees. This was still short of the USAF requirements, but was the largest which could possibly be achieved with a conventional HUD optical design. To achieve an even bigger field of view our design team had to go back to first principles.



Idealised Optical Configuration

If the collimating element is placed on the corner of the glare shield at the intersection with the ejection safety line, one can achieve the biggest field of view with the smallest possible size of collimating element. This optical system, however, requires the CRT image to enter from the pilot's side. This is not readily achieved as we have already moved next to the ejection line. Our team evolved therefore a method of folding the light around, using a variety of flat mirror-type surfaces, to achieve a condition where the CRT would fit back into the location available for it.



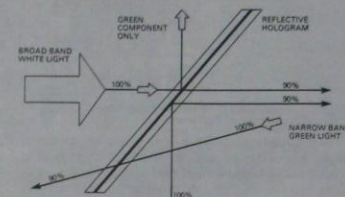
Quasi-Axial Optical System

A number of snags remained with this approach, however. First, as the various optical rays are always off-axis to the collimating element, a complex relay lens was required to position the image of the CRT in a position where it would be truly infinitely-focused by the collimating element. Secondly, it is necessary to minimize distortions due to being off the true optical axis.

The main remaining difficulty was that, with conventional optical coatings, whilst the design would work theoretically, its efficiency would be completely unacceptable (about 2%). Under such conditions, a pilot would be quite unable to see the CRT image against the outside world background and his view of the outside world would also be attenuated.

Holograms the answer

The ability to use holograms (or, to be more technically precise, diffraction gratings), instead of conventional reflective coatings, transforms the situation and makes the whole optical layout feasible.



Reflectance/Transmission Properties of Holograms

I should explain that the holograms used in the LANTIRN HUD are essentially holograms of mirror surfaces, produced by exposing a photo-sensitive material to an interfering pattern of light produced by that mirror surface. They can be thought of as semi-silvered mirrors, such as are produced by conventional optical coatings but with unique properties. First, they will reflect light only of a certain bandwidth (i.e. colour). We choose the colour produced by a narrow bandwidth green phosphor on the CRT. They do, however, reflect this light very efficiently (typically about 90%), while still allowing all other light to pass straight through. Because of the narrow bandwidth in which they operate, white light is effectively transmitted at about 90%. In other words we have found one of the rare conditions in life where we are getting something for nothing: a surface which transmits 90% of the light hitting it and yet apparently also reflects to similar value!

In addition to this useful phenomenon such holograms can, over a fairly limited range of angles, go from reflecting nearly all light of this phosphor bandwidth to transmitting (with some change in the angle of incidence), nearly all of the same light. Thus for some angles, a green ray will reflect from the hologram, whilst at other angles it will pass through unimpeded. These features allow us to raise the efficiency of the optical arrangement used from the miserable figure of some 2% to something more like 40%—a figure which makes the display even brighter than achieved with a normal HUD optic.

No aberration

It is also possible to make rays reflect from holograms at angles which are not the direct reflection of their incidence angle. Indeed, the effect of such altered reflection angles can be controlled across the area of a hologram. Such optical shaping or power characteristics would create an aberrated hologram. Because such aberrated holograms are much more difficult to manufacture, and produce other side scatter effects, we do not use them in the LANTIRN system.

Design for manufacture and service use

Great attention has been paid to the manufacture and maintenance of the HUD system with acceptable long term life cycle costs.

In particular, maximum use has been made of the important design standards evolved by the United States Air Force. The three MIL standards making up the so called 'TRIAD' have been successfully brought together, for the first time, in this equipment. These are—

MIL-STD-1553B—Standardised Electronic Data Highway. This reduces aircraft wiring and would enable additional equipments to be installed in an aircraft more flexibly.

MIL-STD-1750A—Standardized Computer architecture, ensuring compatibility with international high level language development such as ADA.

MIL-STD-1589A—Standardized Jovial J73 Computer language, to allow ready support or modification by the USAF during the life of the system. Pending the long term availability of ADA, Jovial J73 will be the standard USAF language.

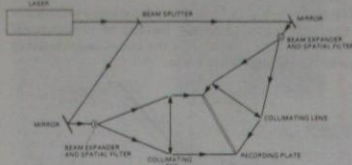
The equipment makes use of a wide variety of 'state-of-the-art' electronic devices—large scale memory, programmable array logic and microprocessors and

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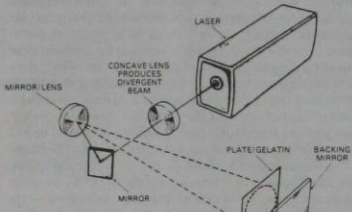
The LANTIRN Head-up Display

includes many custom designed hybrid micro circuits. In common with all other Marconi Avionics HUDs, it comprises convenient replaceable modules, for ease of manufacture and maintenance.



Production of Reflection Holograms Using Separated Beams

I have already stated our avoidance of aberrated holograms in the optical system. To produce them would require the laser beam we use for hologram exposure to be split into two and brought together again to interfere on the element under exposure. With a sizeable difference in the two path lengths, a controlled wavelength difference can exist in the two beams. The total energy which can be put into the element being exposed however, would be low and the exposure time, therefore, fairly long (of the order of 20 minutes). The problem of holding two beams stable to fractions of a wavelength over such a time would be considerable.



Hologram Generation Using Back Reflection

With unaberrated holograms it has been found possible to achieve the necessary interference pattern by a single beam of light, back-reflecting from a mirror in close contact with the element being exposed. This technique also allows an order more laser energy to be focussed into the element, drastically reducing exposure time. With only this single beam to control and a short exposure time, the stability problem is eliminated so the holograms are easier to make.

The LANTIRN programme

The USAF programme involved the placing of two independent contracts, with Martin Marietta for the LANTIRN navigation and targeting pods, and with Marconi Avionics for the HUD. Both contracts have required ambitious technical developments. The equipment from each contract is for fitment to the F-16 and A-10 aircraft but must be capable of fitting other types. Thus the programme has required extensive technical co-ordination between the various contractors involved. The large number of sub-contractors, whose expertise in their respective fields has also been important, has created a complex international programme management task for both the USAF and their prime contractors. Today's event testifies to the success and effectiveness of this programme management.

Notwithstanding our handover of this initial system, we have a busy time ahead of us. There are a total of 11 development HUD systems to produce for the F-16 and 5 for the A-10, all within the next eight months. Flight trials start on the F-16 this summer, with a corresponding programme for the A-10 a little later. The various equipments are scheduled for qualification tests, reliability tests, maintainability test and bench integration tests, as well as spares and back up for flight trials. This depth of testing will ensure that, when production aircraft receive this system in 1984, it will meet or exceed the standard set by our present F-16 HUD. The capability of this aircraft with the Marconi Avionics 'conventional' HUD was convincingly demonstrated recently by clear superiority in the RAF tactical bombing competition. With the LANTIRN system the USAF intends to achieve a comparable capability at night for both the F-16 and A-10, so enhancing the effectiveness of the NATO defences. We are pleased to play our part in the successful development of equipment for this programme, in the way we are demonstrating today.

MANOR HOSP

Join the Manor Ho Hosp

You can now join the Manor House Hospital Scheme and enjoy all the new improved benefits at no extra cost. Since the membership group at Marconi Avionics was first formed, there has obviously been a large turnover of staff and there are quite possibly some new employees who may not be aware of the benefits available to them through joining the Manor House Hospital Scheme. A brochure giving full details of the Scheme will be distributed to every employee in September. Some of the new benefits have been introduced since the brochure was printed and existing members at Marconi may not be aware of these.

For many years there has been a payroll group at Marconi Avionics and both male and female employees have been able to have their contributions deducted from their salaries or wages. A great many have benefited from the treatment they have received at the Hospital. Last year alone 145 employees of Marconi Avionics attended the Hospital as out-patients. They subsequently received treatment as in-patients and a total of 594 bed days were spent at the Hospital.

The following are some of the improved benefits which have recently been introduced not only at the Hospital itself but also in your area.

Firstly, a brand new X-Ray Department was opened at the Hospital last September at a cost to the Society of more than £500,000. Having this very modern department enables us to carry out far more detailed X-Rays and results in a more complete service. It is also projected to set up a special back unit in the not too distant future.

Secondly, we have obtained the services of Doctor J. Lorimer in Canterbury to act as Medical Referee for the Hospital. Many out-patients can now be seen by Doctor Lorimer in Canterbury and this has reduced the waiting time for an appointment to an absolute minimum. This has also had the effect of reducing the waiting time at the Hospital as fewer patients have to attend there. It is

To Pastures New

It was ever thus - the grass on the other side is always greener, and the opportunities and environment is always considered better in some other place.

Alan Meade of Gyro Division is hoping that this is correct in his case. He began his career with Marconi Avionics Ltd in August 1980, coming from Rank Electronic Tubes. Starting in Gyro Division; as a test/calibration engineer, under Bob Dyer. His contribution to the success of the up and coming division, was of the highest order.

Born in Gravesend in 1959, his education was at Gravesend Grammar School for Boys, and Bromley College of Further Education, where he obtained his HNC in electronic studies.

With hobbies of orienteering and wine making (often combining the two, collecting berries etc, en route for the latter!). He is also a keen musician, and a member of the Elliott Concert Brass Band, playing the cornet.

Married on 31st July last, to Chris - his sweetheart for many years, and to use his own words 'he did the decent thing'.

At this stage things took off, for Alan had applied for a post with an electronics company in New Zealand, and received confirmation that his application was successful and could start in August 1982. He left the company on August 11th, and went to Wellington (north island) on 23rd August by air. Before leaving, his friends and colleagues in the division presented gifts to bring back memories of the association. We are told he will be greatly missed in the division, but all good wishes to him as he starts his new life, supported by a new wife.



Alan Meade receiving his gift from Mr Brian Herring, Production Manager Gyro Division. (D)



Alan with L-R Brian Cherry, Bob Dyer, Richard Jarvis and Erik Loft. (D)

The benefit of Perks

Members of the Transport Department were invited to a reception at Dutton - Forshaw, Strood, to mark the reopening of the showrooms after a serious fire.

This shows how to enjoy a not too serious a commitment.

No prize for naming the males!



Many of us have been parties to or been hearers of the cry 'where do we go from here?' or 'what shall I do now?'

Living as we do in this area, which Charles Dickens immortalised in his novels, no doubt you are familiar with 'the Tale of Two Cities', so just for a while be patient while I recall a 'tale of two men'!

For this purpose, we will assume both men were the same age, they were pals, having grown up together began work together, liked mostly the same things and in due time were married within weeks of each other. Before being married to the lady of their choice, they had spent much time house-hunting, until they found a property that seemed to suit them, and for which the asking price could just about be met, by use of savings and a mortgage. The decisions of both couples were fairly identical, and arrived at separately without consultation with each other.

They decided the wife would continue working, for a time before starting on that greatest of human associations of starting a family.

Things went well, they settled to their new lives easily, and began to look forward to the future. Making their houses into homes, and adjusting to thinking plurally instead of singularly.

Together they discussed plans, hopes and ambitions. These concerned finances, and attempts to lay down a 'Budget' for the future were made.

Consideration was given to insurances, pension schemes and savings schemes, and here they became somewhat in variance to each other.

Mr A, and his wife, thoughtfully looked into the future and decided that life was an enigma, with many possible 'ifs and buts', that had to be taken into account and prepared for, if possible. They realised that the sun did not always shine, and that there were rainy days.

To make provision for these possibilities, they realised

HOUSE ITAL

use ital Scheme now

o hoped that in the near future additional services will come available in the Canterbury and Medway areas. Possibly there could be a clinic of physiotherapy for outpatients. Members would then not have to go into the hospital as in-patients. Unfortunately, arrangements for s have not yet been finalised.

From this you will readily see that for 30p. per person per week, this is an extremely good investment.

As you are no doubt well aware, the National Health Service has a great many problems and should you have routine health condition, this could mean a lengthy wait for treatment, especially in the Medway Area.

So, why not join now and enjoy the protection and peace of mind membership of the Manor House Hospital scheme will give you for a very small outlay.



Manor House Hospital



A ward inside Inverforth House

For Careful Consideration

that certain economies would have to be made.

Realising that when young, the idea of pensions was a far away thing – but no doubt it would come, and looking right ahead, they decided that it would be a good thing to take up the company offer of membership of the pension scheme, even though that meant holidays at home, instead of abroad. That insurances were also cheaper when young, and could become 'savings' as well.

And so the pattern of their life was settled. In due time offspring arrived, and the house resounded to childish chatter and noise, and a happiness abounded.

Mr & Mrs B, also looked into the future, and found too that life was full of uncertainties, but decided that they would live for the present. They had always changed the car every two years, they always took their holidays abroad, and enjoyed a really hectic social life.

There incomes ensured they were able to continue in the lifestyle they had established, and they too began a family, adding to their responsibilities without detracting from their commitments.

Extra financial burdens of family, were coped with, but nothing to spare for the rainy day. Insurance salesmen were listened to, and politely dismissed with the usual, there is 'plenty of time to consider that – later'. The details of the company pension scheme were supplied to them, and were read but decided that 'there is plenty of time for that when the children have grown up', besides, the contributions would cause us to curtail some of our activities and they did not enrol.

Both at the age of 40, life seemed to hold out much promise. The children were growing up, doing well at school, and work prospects appeared bright. Then – Disaster.

Mr 'A' was on his way to work when his car broke down. It was raining and visibility was poor. He got out of the car, lifted the bonnet to ascertain the cause, and

decided to look underneath. Getting out the jack, he lifted the car up and crawled beneath, found the trouble – and made a temporary repair and got to work. On arriving home that evening he told his wife of the trouble with the car, and said he would make a proper repair after the meal. He got out his tools, and prepared for the job, jacked up the car, and put a piece of wood under the jack to get more 'lift'!

Happily working away, when suddenly – crash, the jack slipped, the car came crashing down and he was crushed, with extensive injuries, and died from those injuries in hospital a few days later!

"Where do we go from here?" – "What shall I do now", The heart rending cry came, as it always does, when calamity strikes and the future seems black.

And so for Mr 'B'. The shock of losing his best friend was great, but life had to go on. He gave his sympathy and offered what help he could give. But the uncertainty of life was around us. He listened as the funeral service proceeded – 'in the midst of life, we are in death' . . . 'Oh! just religious jargon.

That weekend, he was off to the seaside for a short break. The weather was not too promising, but in his usual attitude he made his own decisions, without taking advice. Arriving at the seaside, with a spate of sunshine he prepared for a swim, and took the plunge. Enjoying himself as he cavorted in the water his wife was sitting on the shore watching him and smiling at his antics. His bravado took him out further from the shore into deeper water and bigger rollers. Neither had noticed the wind had got up quickly, and the sea suddenly began to heave and crash, and became unruly. The storm broke, and Mr B was out of his depth; his skill as a good swimmer had weaknesses and these combined so as to make that swim his last. His body was recovered, some days later . . . 'in the midst of life . . .'

'What shall I do?' asked the widow, and no one to answer.

Then the looking into the future for the widows, – Mrs A realised that the insurances would cover the mortgage and the children's school fees. But the visitor from the company, who came to express sympathy also brought new hope. Mr A had joined the company pension scheme as soon as he had the opportunity, and so the company representative was able to arrange for a cheque for twice the pensionable earnings with increases for any dependant children under 18 yrs up to a maximum of 4 times the amount of pensionable earnings from the 'Death Benefit scheme' part of the pension arrangements. There is also an addition of the total contributions paid by the contributor, plus credited interest being returned. (See page 14 of handbook for full details).

For Mrs 'B', there was no insurances, no pension scheme benefits. The mortgage could not be met from the widows pension, and the Building Society had to foreclose. She lost her home, and her self assurance, she became demoralised, and became ill.

The morale? Mrs A was able to answer 'What shall I do now' with a positive – life must go on, and the ability to do so. Financial worries were alleviated. For Mrs B she had no hope, no help, and the self indulgence of previous years could not help now. She was without help.

It is never too early to consider these things. We do not know who will be next. Be like the boy scouts – 'Be prepared!' even if that means a diminution of activities for a while.

For full details of the Pension Scheme, operated by the company contact: –

Mrs J. Crick,
Personnel Dept.

and don't be put off – there may not be plenty of time.

RETIREMENTS

There has been a number of retirements during the past 10 months, and we give below a list of some of them:—
From IN division in the persons of Percy Nottage, of inspection and Mrs P. Jennings both received gifts to remind them of their days among their friends.

Mr D. Harries made the presentation to Mrs Sambrook of a clock, of unusual design to mark her retirement from production department, IN division.

Also Mrs Stratford of IN production department, who received a folding chair.

Both had been associated with the division for some years and had made many friends.
Mr Burnell, who worked in the IN stores and Mr Breen have 'packed it in', and taken retirement. They left with good wishes ringing in their ears for long, happy and satisfying retirements, and to keep them with memories of the friends they left behind, there were cards signed and gifts.



Mr Nottage, IN (A)



Mrs Jennings, IN (A)



Mrs Sambrook, IN and Mr Harries (D)



Mrs Stratford, IN and Mr Harries (D)



Mr A Burnell (A)



Mr Breen (A)

Henry Martin—proper name Peter—a real character in ADD recently retired. Why he was called Henry is lost in antiquity.

He had had a varied career, and was a P.O.W. for 5 years. His service began in AEI division where he was the victim of a serious accident. On the merger of AEI and FID Henry joined ADD, starting as a 'broom pusher', later due to ill health he was transferred to stores, where his duties took him around the works. Together with Alfie Cass they were known as the 'deadly duo'.

Henry had a charm, all his own, which made all the girls love him!



Henry Martin, with some of his girl friends and colleagues.

*There's great distress within the Stores
They've been dropped in the mire,
The dreaded secrets been released,
Henry's going to retire.*

*Poor Cyril don't know where to turn
He's tearing out his hair,
(And where he's had to tear it from
Has caused him great despair).*

*The very saddest sight of all
Is poor old Laurie Sears
Since he heard that Henry's leaving
He can't hold back the tears.*

*Poor Laurie is a broken man
He keeps mumbling funny lingo,
Carole says 'He must be bad'
He's missed a whole weeks bingo.*

*The whole crew on the kitting bench
Are wondering who to blame
When asked 'Who's kitted up this mess'
They can't give Henry's name.*

*Syd Baker won't be caught out though
He knows just where he's at,
Now he can't blame Henry,
He'll blame Eric, Phil or Pat.*

*The Stores are sure to go down fast
Once Henry has departed,
Everyone is full of woe,
Completely broken hearted.*

*But Martin Polley yet again
Has a trump card up his sleeve
He says 'There is no problem'
I won't let the bastard leave.*

25 YEARS' SERVICE

A further servant of IN Division recently joined the elite corps of Long Service employees, when Kenneth Richard Venison received from Mr D Eyers, Divisional Manager IN, a clock to mark the event.

Ken Venison started with the old GW division as a trials-engineer in 1956. He joined IN Division in 1960, and has remained within the Division ever since. He has progressed in the Engineering organisation from Project Engineer, Project Leader in 1973 to Project Manager in 1974, which post he still holds.

Our photograph shows the delight on completing 25 years, and the giving and receiving of the tangible reminder. Ken Venison on left. A D Eyers on right.



Ken Venison receives his gift. (A)

Among the recent 25 years award winners, we note Mrs C. Knowlden, a wiring operative in FCD. Formerly in the old TAC division, became part of the FCD groupings when the merger with MAC took place in 1970. On the sub-division, in 1980, she remained in the FCD group.

She had selected a Wrist Watch to mark the occasion, which her divisional manager presented to her.



Mrs C. Knowlden, with a group of colleagues. (C)

OBITUARY

We deeply regret to record the death, suddenly on Friday 10th September of Joe Campbell. Formerly of the Transport dept. He was well known as the driver of the inter-works bus—Main works to flying school.

A well liked and esteemed man, he had worked for the company, on various tasks within the Transport dept. for 17 years, until his retirement in November 1981, but will for ever be remembered as the driver who initiated the service which he made his own.

A family man, he leaves a wife, son, daughter and several grandchildren. His daughter lives in Rochester, but his son emigrated to Australia a couple of years or so ago.

He had a great passion for 'the helping hand', and his membership of the R.A.O.B. gave him a vehicle in which to exercise his passion.



Joe, with Dora his wife on the occasion of his retirement, with gifts presented to him by Mr G. Thomas, General Manager. (C)

Can you name it?



A

The two photographs, shown here, reveal a very large hole, which has been dug in the GYRO division.

Contrary to rumours, it is not for the burying of scrap, or other unwanted items!!!

It has a real and important significance and is necessary for essential work in the testing of the latest family of GYRO's.



B

However, we want to give a caption to these two pictures, so will you please join in the fun, and send in your suggestions for a caption for picture 'A' and picture 'B'.

You can submit ideas for both, or a single picture. The Editor will award a £5 note to the sender of the 'caption' judged to be the best! one for each picture.

Entries, please to Editor MAv News, Portakabin 4. By 22nd October 1982. Anyone submitting an entry from an address away from Rochester works, must add: -

MARCONI AVIONICS LTD,
AIRPORT WORKS,
ROCHESTER, KENT
ME1 2XX

Don't forget to enclose name, address and division. Editors decision is final.

Apprentice Activity

We welcome to Marconi Avionics Ltd., the young persons listed below, who are entering upon their training to fit them for an adult and responsible life, with a career, to which they can devote their knowledge and skills.

We wish them well, and would remind them that life rewards come to those who dedicate themselves to their work, with sincerity, skill and faithfulness. This may mean, at times foregoing some pleasures of the moment - but it will be worth it.

Rochester Grammar (GIRL)
Judith Adams, Samantha Murray
Temple Secondary School
Gary Baker, Christopher Colgan, Garry Myers
Mid Kent College
Simon Barton, Stephen Gibson, Christopher Henley, Robert Hodges, Gary Lambkin
Walderslade Secondary Boys' School
Iain Coates, Mark Colclough, Anthony Edwards, Paul Harris, Michael Horder, Andrew Macey, Robert Parkins, Carl Poynter, Shane Stevens, Paul Thompson, Raymond Turner.
St. George's C/E School
Brian Sampson
Mark Willis.
Sir Joseph Williamson's Mathematical School
David Averre, Adrian Davies,
Nicholas Stansell.
Warren Wood Boys' School
Stephen Baldock, Kevin Barker, John Mears, Mark Potts, Jeremy Scriven.
Vinters Boys' School
Gavin Malavolta, Martin Pearce, Andrew Tucker, Neil Wilson.
Chatham Grammar School for Boys
George Cooke, Jatin Dhanecha.

Fort Luton
Kevin Eisegood.
Borden Grammar
Paul Foreman.
Thamesview Secondary School
Stephen Freed
Swadlands High School
Timothy Horrell.
St. John Fisher Secondary School
Timothy Edwards, Stephen Monks, Sheelagh Reynolds
Gravesend School for Boys
Leslie Weller.
Gravesend School for Girls
Ursula Williams.
Fulston Manor School
Christopher Avery.
Herne Bay Secondary School
Christopher Barber.
Oldborough Manor Secondary School
Antony Barnes, Steven Hebdon.
The Robert Napier School
Ashley Carr, Stephen Fairbrother.
Maidstone School for Boys
Andrew Featherstone, Stephen Mann, Ian Crouch.

Maidstone School for Girls
Lesley Friend.
Rainham Mark Grammar (Gillingham Tech.)
Justin Dixey, Paul Salmon.
Hundred of Hoo
Mark Patch.
Rede School
Steven Finch, Guy Smith.
Shiplake College, Oxon.
Anthony Furniss.
Maidstone Grammar
Frank Hall, Edward Jones.
Maplesden Noakes School
Andre Sadeghpour
Howard Secondary School
John Graham, Michael Hill, Thomas McIntyre, Tony Sellings, Gary Smith, Ian Smith, James Stanley.
Upbury Manor
Darren Oxford.
Simon Langton Boys' School
Christopher Paul.

As the days, months and years pass, so does the time used by apprentices, to learn and absorb all that is fed to them, to enable each one to make his mark in life. The test, whether they have 'learned well' begins when they are posted to the dept., or division to begin their life work.

The following listed apprentices, having completed their training at the end of August 1982 have been so posted, and located in the Divisions indicated.

T. I. Baker
P. A. Barnaba
D. Bowness
D. J. Broadbent
B. P. Brooks
N. Carter
K. J. Clark
G. W. Ghost
P. R. Giles
G. B. Hollands
G. A. Jenkins
P. Kitney
M. J. Love
S. J. Mugford

ATE Eng
IND Eng
ADD Eng
ATE Eng
MASD Eng
ISD Logistics
ISD Logistics
ADD Q/A
ADD Q/A
ATE Eng
ISD Logistics
IND Eng
COD Emc
ADD Eng

D. J. Byrne
J. J. Hawkins
C. Mullett
T. D. Gambell
T. G. Snelling
K. J. Stannard
S. J. Turner
S. P. Lauder
S. G. Newman
G. S. Francis
T. Porter
A. R. Prime
M. Mattacks
A. M. Pack

FCD Post Design Services
ISD Logistics
CAC Apicon
PSD Planning
ADD Planning
MASD Estimating
CAC Mod Shop/Planning
IND M/C
—
CMS M/C
CMS Bench
CAC Insp
CAC Prod Eng
ATE Test

R. G. Johnson
S. J. Livermore
J. J. Robinson
R. W. Stephenson
M. D. Weissen
C. Watts
L. A. Woods
B. A. Pells
S. M. Robinson
J. Stevens
D. S. Harman
R. J. Humphreys
K. L. Winter
C. S. Moran

ATE Test
—
IND Test
ADD Test
IND Test
ISD Test
—
CAC Mod Shop
AS & R Inst/Tech
—
CAC P/Wir
CAC Insp
CAC P/Wir
ADD Test

Farnborough Air Show 1982

On Press Day, at the show, Mr J. Pateman C.B.E., Managing Director gave an interesting address to the assembled journalists.

This briefing attended by about 100 journalists representing the worlds press and media, was one of the most successful press conferences ever held by the company,

in spite of the fact that 3 other major companies were holding briefings at the same time. These were Lockheed, British Aerospace and Rolls Royce. This proves the esteem in which professional men of the media (terrible word) hold the company.

Quotes from the address will appear in future editions.

PROGRESS

The company expansion programme, continues apace. Employees will have noticed the commencement of site works, in preparation of the erection of a single-storey building, of 11,120 sq feet named 'FALCON' Building. This should be completed by June 1983, when ADD will move in, for the production of 'HOLOGRAPHIC' items.

Sports and social club round up

Marconi/Blackwater Sailing Club Visit to MAV/BP Club

Over the Bank Holiday weekend 28th - 30th August, five boats from the Marconi Sailing Club made the sea passage from the Blackwater to visit the new MAV/BP Sailing Club in Colermouth Creek on the Medway.

The visit was the first made by MSC Members because of the lack of facilities previously to the Medway, after entertaining the Rochester sailors for many years at the now traditional Sailing match held on the Blackwater every Spring. The flotilla of small boats that made the trip were 'KALINKA' (Rusa Fuller - cruiser class captain), 'MARINERO' (John and Dave Thomas), 'VANERLO' (Ron Phillips), 'COPERNICUS' (Vic Tate) and 'ROANOAKE' (Denis Byatt). 7 other visitors acted as crews on the various boats. Outside Garrison Point the visitors were met by their Club President Mr Jack Pateman, sailing his Golden Hind 'OENANTHE' and all sailed into Colermouth Creek at 18.30, having left the spitway busy at 10.00 hrs on Saturday morning.

A social evening had been organised at the Club House and each of the guests were welcomed by the club Commodore Gordon Hillier. There was much talk of boats and things boating, which went on late into the evening, the only interruption being a halt for a superb running buffet organised by the hardworking ladies of the committee. Skippers and crews from BP/Marconi included Malcolm Moulton (MAV) with 'CENTAURINA', Brian Herring (Gyro) with 'LADY AMANDA', Ken Beldem (BP) with 'MOSELLE 11', Roger Gulvin (BP) with 'TACUS', Eric Fosberry (CACD) with 'SEA EAGLE'. In all 49 people attended the evening, which was a huge success.

The morning of the 29th dawned bright and clear with a fresh force 5/6 SW wind blowing and a party of the visitors were accompanied up river toward Rochester on a sight seeing tour. Another party elected to stretch their sails in the estuary and a very pleasurable and exhilarating trip was made out to Warden Point and then back to Queenborough.

On Monday CENTAURINA stole away at 06.45 for Conyer in the Swale and the MSC visitors left the club moorings on the 10 o'clock high tide to sail back to the Blackwater, the weather was very windy and promised a very lumpy and difficult trip. We subsequently heard that all the boats arrived safely in the Blackwater making excellent time on their way home with no problems; we look forward to having them visit again next year.

The next event is to be a laying up supper at the Club House on 31st October. Details to be announced shortly.

'65 Club

The August meeting of the club, was held on Tuesday 16th, when the final arrangement for the outing next day were made. A series of Bingo games concluded the evening.

The highlight however, was the Annual Company Outing on Wednesday 17th August.

The day opened up with grey skies, but the optimism for a delightful day out was of the highest.

The company had provided 3 coaches, which were filled to capacity for the trip to Eastbourne. After calling at various points within the area to pick up passengers, the three coaches came into the works, to take on board some 30 other members, and also a packed lunch, for each person, provided by the company, and supplied by the canteen (supervised by the catering manageress - Mrs Scott).

The route was a tour of the countryside - avoiding the towns of Tunbridge, Tunbridge Wells, Lewes etc., and although odd showers came, hope for a fine day at the resort continued.

Arriving in Eastbourne, late morning, in a deluge, most people

sought refuge in shelters, the pier, or tea shops. The sea was rough, and if you did not get wet from the rain, the breakers saw to it that you got damp!

However, the rains continued unabated, and members found shelter by visiting the shops and shopping centre. Here they met other visitors and residents and revived the ancient pastime of conversation.

The skies cleared, after we had been 30 minutes on the return journey, and the travel through a sunny summer evening, made up for the rains.

It was voted a huge success, because it brought people closer together, and the ability to make friends by conversing together, added a new dimension to a happy and successful outing.

Marconi - BP Squash knock-out competition

A very successful tournament was staged at Four Wents Club House, Hoo on 11th and 12th September 1982.

There were 26 original entries, with 18 actually taking part; made up of 12 MAV personnel and 6 BP.

Semi-finalists were - D. Burrows against G. Rothwell, J. Mosse against Ben Winder.

with the final between Joe Mosse and D. Burrows, both of ADD DA dept, with Joe Mosse running out the winner, with score 10 9, 9 6 2, 10 9, 9 5 9, 9 6 5.

The final was well played by both competitors, who wrestled on the court for approx 1 1/2 hours before the match was clinched.

It is hoped that this competition will have generated a bit more interest in the Squash Section which meets on Monday and Thursday, at the Club house, Hoo from 7.15pm onwards!



Mr. Joe Mosse, the Squash competition winner (left) and Mr. Dominic Burrows, runner-up.

Athletic Badge Competition

There were 26 entries received for this competition, but unfortunately in the opinion of the Adjudicators, none of those submitted are worthy of adoption, for the purpose of the Athletic Section.

However, it was felt that one or possibly two, were suitable as ideas, and capable of being developed.

The prize of £10 has been awarded to the designer of the one with the greatest potential. The winner therefore is Anthony Barry, a 'Sandwich course student' of Portsmouth Polytechnic in 'Business Studies', who for the past 6 months has been in the Accounts Dept., at Rochester.

Anthony submitted four alternative designs, and the thanks of the section, and M. Av News, is extended to all who submitted designs, and hope that in any future competition greater success will be achieved.

Diary Dates

Wednesday 13 October 1982

Bingo Section - AGM 7.30pm

FREE RAFFLE - FREE BINGO

Members of section only

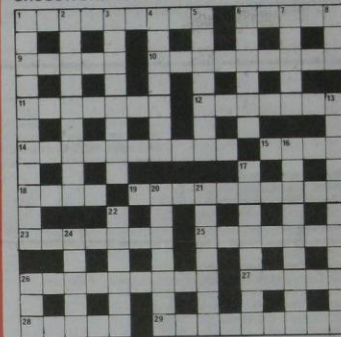
Saturday 16 October 1982

Dance and Cabaret, with 'Life and Soul'

Ayleford Community Centre

8.00pm until Midnight £2.50 each (inc. supper)

CROSSWORD No. 45



ACROSS

- The flat that hurts (9)
- Not tasteless or insipid (5)
- The self that's not seen (5)
- Just one of its own, in weight (9)
- The growth through character (7)
- Having some negro characteristics (anagram) (7)
- Does quite satisfactorily (10)
- Machinery product or of hand (4)
- Fit and effective sailor in the flesh (4-6)
- Excellent and through, U.S. class like (7)
- Orientalist's boldness (7)
- The horse that 'flew' to York (5-4)
- Becomes a debtor by this (5)
- Not in that place but belonging (5)
- A class in boxing, unheavy (3-6)

DOWN

- Careful and industrious worker virtue (11)
- Unrivalled printing type size (9)
- Painfully Difficult (8)
- Deference (7)
- Old time clock, without works (7)
- Before Kent is (6)
- Father to schoolboy (5)
- Yorkshire river (3)
- Old time Man of war; fearful (11)
- Movement general (9)
- With one or more (3-5)
- A tree's glory, cooks natural harbour (7)
- Home of alien representative (3-4)
- Looking for hat he years (6)
- Semi precious stone? (5)
- Cricketer takes strike with (3)

For amusement only.

SOLUTION TO CROSSWORD No. 44

ACROSS

1 Hopscotch, 6 Awful, 9 10 Rhode Island Red, 11 Lee-side, 12 Bangers, 14 Real Estate, 15 Arise, 18 Chef, 19 High Church, 23 Rattled, 25 Butcher, 26 Second Act, 27 Hence, 28 Petty, 29 Alertness.

DOWN

1 Hurdle Racer, 2 Promenade, 3 Crevices, 4 Trident, 5 Halbut, 6 Awning, 7 Farce, 8 Lid, 13 Shepherdess, 16 Purchase, 17 Chit Chat, 20 Indiana, 21 Habitude, 22 Plenty, 24 Tactic, 26 Sup.

Photographs taken by the Staff Photographers will be acknowledged in the following way: (A) Alan Keats, (B) Linda Jones, (C) Reg Hunt and (D) Albert Marshall.

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