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SUMMER 1968

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SUMMER 1968
Vol. XXIII, No. 2(61)

*in this
issue*

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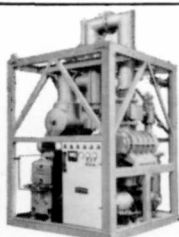


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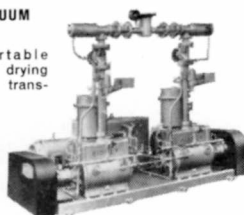


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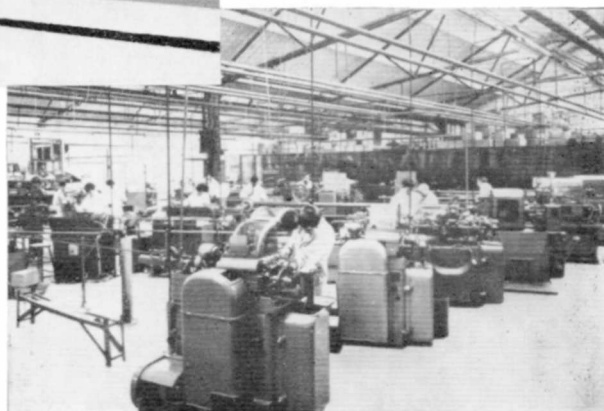
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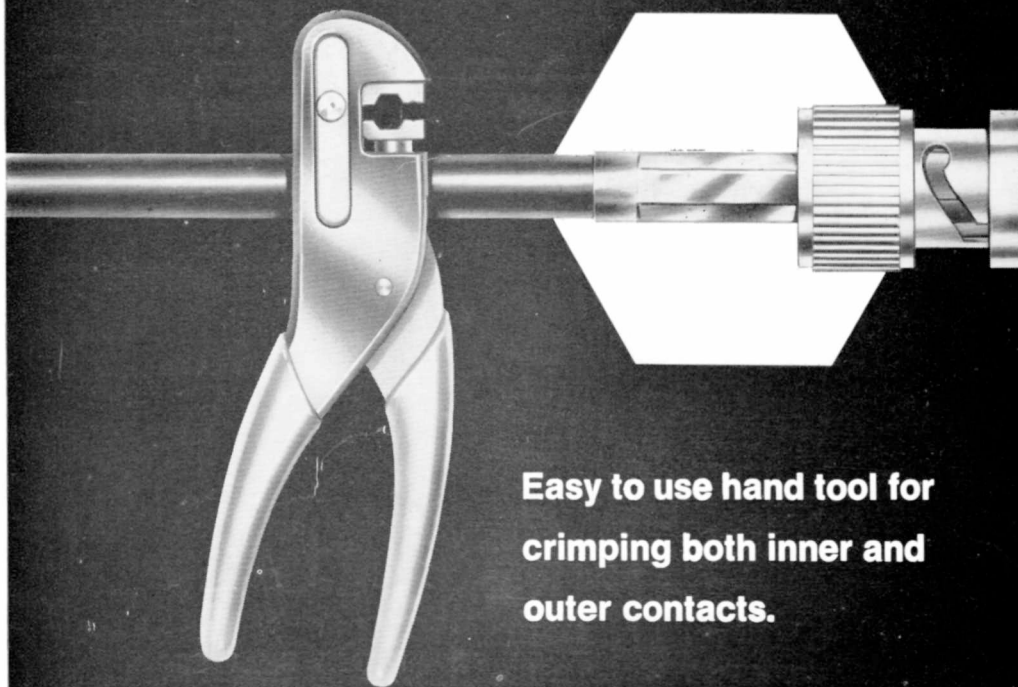
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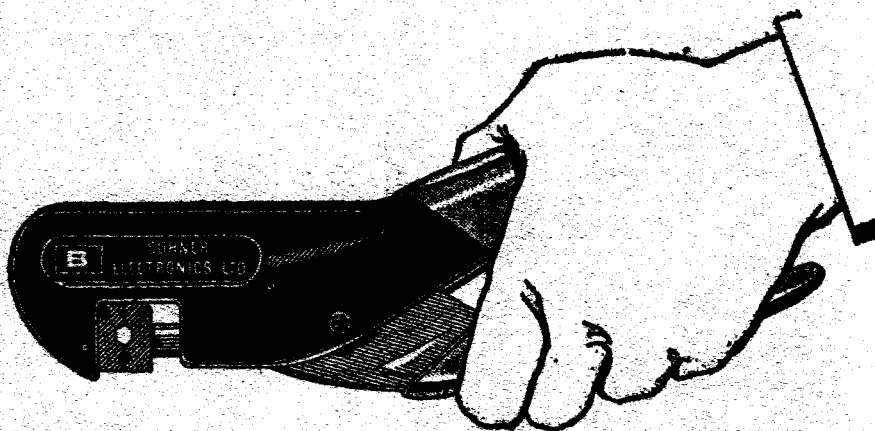
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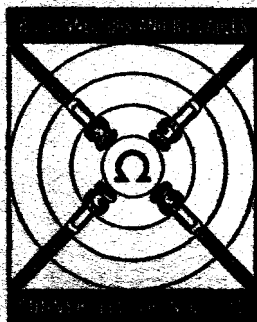
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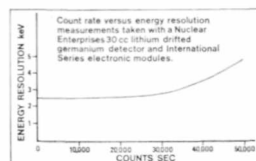
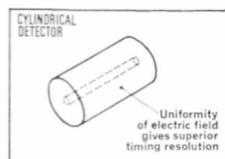
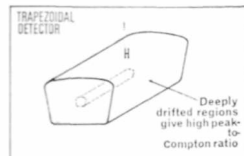
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This modern crystal gazer can foretell the future of a germanium crystal with surprising accuracy — surprising, that is unless you know the amount of painstaking work which goes into its preparation as a lithium drifted spectrometer. He knows that the plated ring of copper on the top surface indicates a drifted depth of 15 mm and an intrinsic volume of 80 cc. Within a few days his forecast will be verified by efficiency measurements made using calibrated radioactive sources. This particular detector has been drifted to comply with a customer's own stringent requirements. However, we also market a standard range of detectors which is the largest in the world. The two detector shapes shown right are currently the most popular, and are available as standard in volumes up to 40 cc.

The system energy resolution is improved by fitting a cooled preamplifier first stage. Field effect transistors, specially selected for low temperature operation, are thermally 'floated' at 30-70°C above liquid nitrogen temperature to optimise their contribution to the spectral peak width. (Ref. Smith and Cline, IEEE Transactions on Nuclear Science, June 1966, Vol. NS-13, pp 468-476).

And now we are delighted to announce that optimized performance can be obtained by using lithium drifted germanium counters with the new International Series (compatible with USAEC TID-2089 3 standards) of modular electronics. The graph right shows the excellent spectral resolution obtained as a function of count rate using a 30 cc detector in conjunction with an NE 4603 amplifier incorporating pole zero cancellation.



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EDITORIAL

No one can tell what the future holds for the present site at Harwell: it *may* eclipse the past, but nothing can detract from the interest and romance of its first thirty years.

Building of RAF Harwell had begun earlier, in June 1935. Prior to that an emergency landing ground had been manned for a year by an advance guard of the RAF, but it was not until the Munich Crisis of 1938 that there began the nick-of-time preparation for what was seen must lie ahead.

From the 1937 diplomatic documents which have now been made available, this fact emerges: Mr. Chamberlain, contrary to the opinion which he wished to encourage at that time, already had no illusions about Hitler and the policies which he was pursuing.

Therefore, as part of this plan, new buildings were put up here, during 1938, buildings now known as 150, 154, 156, 168 and 173, all of which were ready to be taken over at the outbreak of hostilities. At the end of the war they were ready again, for the new purpose with which we have all become connected.

In this it is right that we should be forward-looking, but it would be wrong to allow the memory of those who were here before us to fade, lost in the same oblivion as St. Birinus and William of Orange, who earlier passed this way. It is right, particularly in the 50th year of the R.A.F.'s history, that we should remember them.

To this end, *Harlequin* is pleased to be the first to publish these lines from Herbert Bluen's *Epitaph for an Airman*:—

*He sensed the power incalculable of one
Who rides the secret highways of the sun,
But only the robot murmur of his plane
Answered his question, "Does Man live in vain?"
Now he, whose spirit elsewhere has flown,
Becomes himself a part of the unknown.*



The King's Airspeed Envoy at R.A.F. Harwell.

Below:

A view of the aerodrome with Headquarters (now B.77) at far right.

THIRTY YEARS AGO

HARWELL, 8th MAY, 1938



A big crowd of sightseers assembled on the Oxford-Newbury road on Monday morning to see the arrival of the King to inspect the Harwell R.A.F. Station. As he drove from the hangars to the married quarters at the Station, the King waved and smiled in acknowledgement of the cheers of the crowd.

This visit was one of a series of inspections of the work of the Royal Air Force being made by the King. In January he visited the Cranwell Station, and in March the "shadow" factories. Monday's tour was to one representative station in each of four Commands at home — Northolt (fighter), Harwell (bomber), Upavon (training) and Thorney Island (coastal defence).

At the end of his tour on Monday the King sent the following message to the Force:—

"I have spent an interesting and enjoyable day with the Royal Air Force and I would like them to know how impressed I am with all that I have seen. I congratulate them on the determined and successful way in which they are meeting the heavy demands made upon them by the expansion of their service, and I send them my best wishes".

PLANES INSPECTED

At 11.26 when the King arrived at Harwell from Northolt, the aerodrome was bathed in brilliant sunshine. Escorted by an Air Council machine, the King's scarlet and blue Airspeed Envoy, which was piloted by Wing-Commander E. H. Feilden, Captain of the King's Flight, flew over the heads of the crowd of watchers, taxied round the landing ground and came to rest at the Watch Office, where His Majesty, who was wearing the uniform of a Marshal of the Royal Air Force alighted.

He was met by the Air Officer Commanding in Chief, Bomber Command (Air Chief Marshal Sir Edgar Ludlow-Hewitt), the Air Officer Commanding No. 1 Bombing Group (Air Vice-Marshal P. H. L. Playfair) and the Station Commander (Wing Commander L. G. Maxton).

The Royal salute was given and the Royal Standard broke from the Watch Office tower. The King then walked down the long line of planes to the far end, where representative types of Britain's latest and fastest bombing machines were drawn up.

Squadron-Leader Tuttle,* commanding 105

*The Squadron-Leader, who is mentioned elsewhere in this report, is now Air Vice-Marshal Tuttle.



EX-R.A.F. HARWELL. Back row (left to right) H. D. Hitchcox, D. C. Armstrong, A. H. Roberts, E. P. G. Lane, K. H. B. Frere, F. Jeal, C. Weaving, V. R. Butler. Front row (l. to r.) L. T. Tucker, R. E. D. Trevor, J. Dunn, G. R. Gibson, F. Cullen, G. F. Joyce.

Squadron, told the King the station was formed about a year ago and was re-equipped about nine months ago.

In 225 Squadron hangar Flying-Officer A. J. Guthrie, who was in charge of the Harrow, was asked by the King whether it was comfortable for flying, the weight and number of bombs, and the crew it carried.

The King asked Pilot-Officer A. A. N. Breckon, of No. 10 (Bomber) Squadron, Dishforth, who had come with the new Whitley monoplane, questions about the bomb load, and then looked into the fuselage, where the parachute flares are stored, and was interested in the method of storing bombs. It was pointed out to him that the machines carried gunners at the nose and tail.

Pilot-Officer R. B. Harris of 77 Squadron, Honington, Bury St. Edmunds, captain of the Wellesley long-range machines, was asked by the King if he liked the machines, and replied that it was very nice to fly. The geodetic craft has a range of 1,150 miles and a speed of 228 m.p.h. It is equipped with a single Bristol Pegasus engine.

RADIO CONTROL FLYING

Pilot-Officer G. Kay, instructor of the Link Trainer, gave the King a demonstration of radio control flying, and the King asked if the pilot had to rely solely on instruments and compass.

He appeared exceptionally interested, asking the name of the inventor and where it was made, and showed even greater interest in the device for producing synthetic bumps or air pockets for use in automatic pilots.

The King asked Pilot Officer H. Samuels, of 107 Squadron, a number of questions about the Battle machine, the engine, the crew, and their positions in the craft.

He informed him of the make of machines and of the crews they carried, and the King asked him if he liked them. Squadron-Leader Tuttle replied they were easier to fly than the old ones.

After inspecting the Hawker Hinds and Fairey Battles of 105, 107 and 226 Squadrons at Harwell, the King saw the Bristol Blenheim, a mid-wing mono-plane bomber which, with two rotary engines and a speed of 279 miles an

hour, is the fastest aircraft of its class in service use.

The Handley Page Harrow, the largest service type bomber, and the Armstrong Whitworth Whitley, both of which have flying speeds of 200 miles an hour, and the Vickers Wellesley, with which the R.A.F. hope to break the world long-distance record, were the other types he saw.

The King shook hands with the pilot commanding each of the representative machines.

VISIT TO WORKSHOPS

Squadron-Leader Tuttle again met the King in the workshops, and explained what was being done and the bomb loading.

The operation of releasing the bombs was explained to the King by Pilot Officer Wheatley, who demonstrated the hoisting of bombs to the Battle machines, showing them being wound up and made ready to be retracted to the wings in a position for flying.

Squadron-Leader Tuttle also explained the installation of a new engine into the machine.

He went on to ask for the performance figures and whether the machine was easy to fly. Pilot Officer Samuels replied that it was very manoeuvrable.

After walking through the hangars, the King visited the aerodrome stores, the armament and photographic sections, 107 Squadron barrack block, the institute and dining hall, the sick quarters, the Sergeants' and Officers' Messes, the Junior Officers' and Airmen's married quarters, the guard room and the station headquarters.

In the married quarters the King called on Mrs. L. B. Kingdon, wife of Sergeant Kingdon, and asked her questions about the accommodation.

Within a minute or so of the scheduled time, 12.15, the King's plane began to move slowly across the aerodrome and nine bombers, which had taken off previously, swept down in the Royal salute.

The Royal plane then took off on its way to the Central Flying School, Upavon, a comprehensive tour of the station having been made in 50 minutes.

*Reproduced by permission of
"The Didcot Advertiser"*

"Harlequin" is indebted to Mr. George Joyce of A.E.R.E., M.T. Section for the loan of this "The Didcot Advertiser" for Friday, 13th May, 1938.

At first we thought that this was but part of the issue because there are only four pages, as for the "A.E.R.E. News". The numbering of the pages 1—4 showed, however, that this was all there was.

This was the 250th issue, which showed it had been published for nearly five years. Advertising, which covers both sides of the present version, ran down only the left-hand side of the cover. Of the 27 columns spread over the other 3 pages only 2 columns were of advertising so that the 4 pages were good value for money — three-halfpence — even in those days.

The news covers the Wantage and Wallingford districts who do not seem to have had their own newspapers until later. Under "Wallingford Petty Sessions" we read "Harwell Airman Fined — Assaults at Didcot Cinema". The defendant is quoted as having said "If you don't let me in I shall 'pan' you" and both the Assistant Manager and the doorman were subsequently "panned".

Benson car mishap: — "Four occupants of a car, three men and a woman, had a narrow escape from injury when late on Tuesday night, the car skidded near the white railings and, after turning a somersault, landed on its side in the hedge. After changing a wheel the car was driven away".

A Harwell R.A.F. Officer was less fortunate after hitting the bank in his car on Haddon Hill near Didcot. There is an account of the inquest opened by the Coroner for North Berks.

At Harwell and Chilton Women's Institute a debate took place on the motion that "The Days of Queen Victoria were better than those of King George VI". The motion was lost by a large majority.

Reading this old newspaper, we are readily persuaded that where life has changed it has continued to change for the better. We leave the paper with a last nostalgic peep at the following: —

Bungalows for sale, h. and c.; every convenience from 12s. 6d. per week inclusive; no extras.

By Rambler Coaches to New Theatre, Oxford "The Mikado". Fare 2s. Reserved Pit Stalls 2s. 6d.



JOHN PARKER

Thirty-four years' service

Although not joining the Authority staff until 1957, John Parker of Health Physics has, we believe, the longest record of service to the site itself.

From 1934-35, in his capacity of newsagent, he began by supplying daily newspapers to a small group of airmen centred in the middle of the present site who were manning an emergency landing ground for the R.A.F. He continued this service to the contractors who were building the aerodrome between June 1935 and February 1937, and then to the R.A.F. Between 1941 and 1945 he himself served in the R.A.F., but the service in his name continued and he himself was stationed on the site for six months during 1942.

At the end of the war, he resumed personal control of the business and, when the R.A.F. left, continued to serve the new arrivals of the Ministries of Supply and Works, who were later to be his colleagues.

John Parker's first mention in *Harlequin* was in 1952 as a result of the second CLERIHUEW Competition. Professor Skinner had won the first Competition

with *It's hard to keep tabs on
Our staff of name Abson
For they will undoubtedly trouble you
There's W. and W. W.*

In the second competition there were entries such as

*Miss Croker
Is no joker
You ask her the time of the next train to Town
And she sells you a dozen Christmas Cards
for cash down*

and

*Those who abuse
The Editor of the "A.E.R.E. News"
Are slow to form queues
To step into his shoes.*

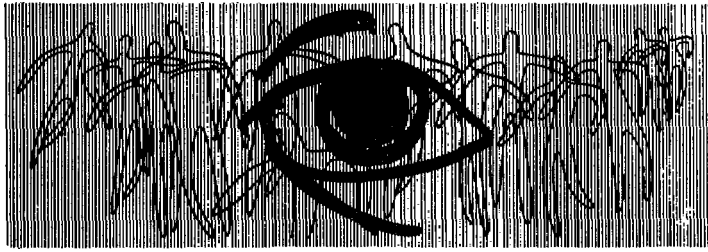
*We may not have made an atom bomb
Or have cause for aplomb
But this much is a cinch, sir,
We've made Chapman Pincher.*

There were quatrains about more illustrious people, such as "Oxford's river namesake" (Lord Cherwell), but better known and better loved was the man who rushed breathlessly from one gate of the establishment to another in his effort to be at each gate at the same time and to serve all with equal efficiency:—

*There ran
A man
Fire? Murder? Or something starker?
No, Parker.*

And as the site has expanded and changed character over thirty-four years, John Parker has continued to serve it.





ENCOUNTER

A human beset by the inhuman . . .

A. L. SHEPHERD (P. & W.D.)

My personal experiences with a “pet” poltergeist (see 1967’s “Harlequin”) have given me the mixed blessing of being one with whom people discuss their own unusual experiences.

Such a one was an A.E.R.E. lady who had experienced footsteps up the stairs; and then her small son, when being put to bed, had stared past her at something standing just inside the door; further, there was a room that was uncannily cold. These and other occurrences over a period of time had forced her to the conclusion that the house was peopled by beings on another plane, from an unknown dimension.

A tentative discussion with her husband about this brought the retort that there must be a logical explanation, but he could not offer one, except that the footsteps on the stairs could be the sound of the people next door walking up *their* stairs. A discreet check next door determined that their stairs were on the far side, with bedrooms and whatever between, so the husband’s explanation for this one part could be discounted.

The occurrences continued with lights and an electric fire mysteriously switched on, on more than one occasion, after being switched off. The woman became worried for the same reason as I did — the fire risk as the household slept.

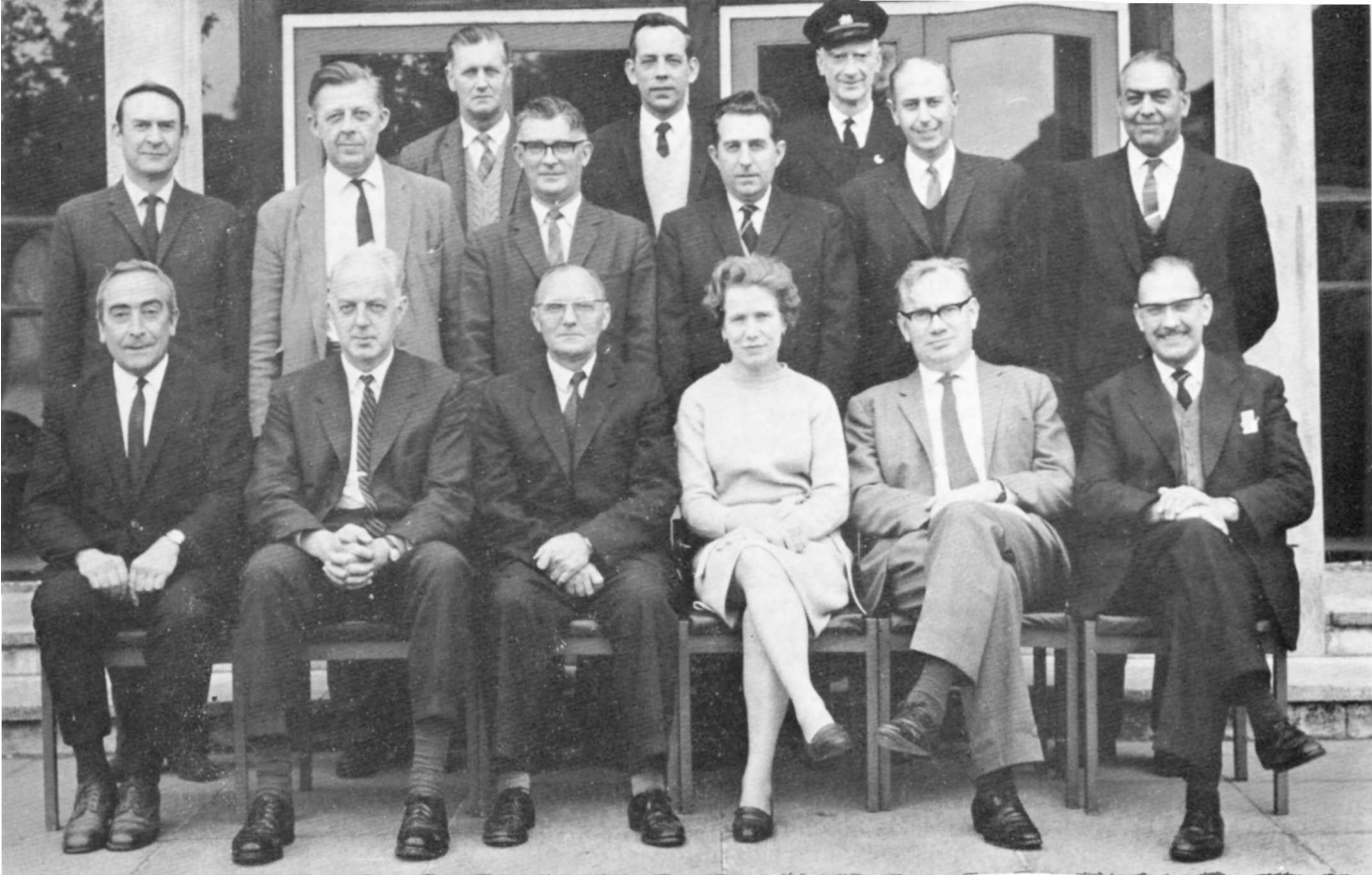
It was at this time that she was shown my article in “Harlequin”. At the earliest opportunity she was introduced to me by the editor. Two cigarettes later our discussion had provided me with the above facts. I was asked if

I had any explanation, but was unable to offer any that would appear feasible, even though I had formed some definite ideas during my encounters. I was then appealed to for a possible “cure”, and this is where my experiences came in, for I was able to suggest that she approach her local vicar and discuss it with him with a view to an exorcism. The fact that she didn’t know who was her local vicar led to some trepidation about approaching him on such a subject. I was able to assure her that the subject is not so strange, startling or ludicrous to a man of the cloth as she imagined, so she agreed to go, and I left it at that.

Some weeks passed before I met this lady again, and before she spoke I could see that once again all was well. Yes, she had plucked up courage and approached the vicar. No, he hadn’t laughed at her, and in fact had been most sympathetic. He had visited the house and had carried out an exorcism in a way that suited the particular “haunting”, with salt and water and exhortations to the spirits to begone.

It worked. for the room that was cold was now warm, the lad slept untroubled, lights and electric fires staved switched off. But, as with myself, it was difficult to realize that the unnerving period was past and had taken on the garb of a bad dream.

This leaves us with a question — as Alice said, “. . . it gets curiouser and curiouser” — how was it done? Are there really forces of good and evil? I suppose there must be, to employ one to combat the other.



HARWELL VETERANS FROM 1946-47. Back row (left to right) C. C. Briscoe, L. J. White, S. G. A. Pope. Centre (l. to r.) J. Woodmore, F. Hart, T. J. Hassett, E. Smart, N. Meadowcroft, F. W. Clamtree. Front row (l. to r.) N. J. Howard, D. Knight, G. R. Gibson, Mrs. W. B. Turner, D. L. Allan, H. Keene

THE FIRST ANNUAL SPORTS DAY was held on Saturday, 14th September, 1946. The modestly printed programme which has come into *Harlequin's* possession records the venue as *the playing field opposite Hostel 'A'*.

The Programme of Events included:	80 yards Wheel Barrow Race	Couples
	Potato and Spoon Race	Children
	Potato and Spoon Race	14—80
	(was there a shortage of eggs in those days?)	
	Slow Bicycle Race	Everybody

There were, of course, the usual more athletic events. Prof. Cockcroft as he then was, served as Referee, supported by a number of names still with us:—Track Event Judge, W. G. Marley; Field Event Judge, D. K. Butcher; Recorder, R. Hill.

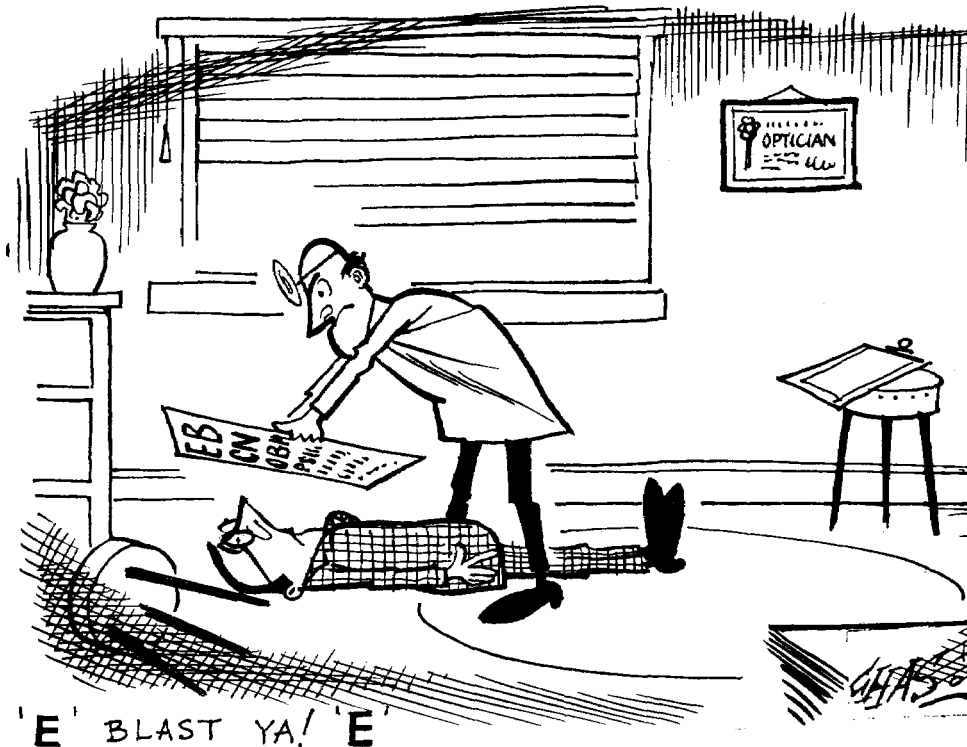
For the loan of this Sports Day Programme *Harlequin* is indebted to S. D. Turner, who left Harwell ten years ago and who is one of our readers at Winfrith Heath, where he is Chief Fire Officer. He and George Hallis served as Chief Whips on this day, 22 years ago.

We ask readers who have relics of Harwell's early days to lend them to *Harlequin*. We already have hopes of publishing for readers a photograph of the historic Tug-of-War of 1946 in which the finalists in this Inter-departmental Contest, the Fire Brigade and Police, struggled for four minutes before victory was secured.

It is some months now since I became convinced that my television set was on the way out. The thing was grossly out of focus, and I wondered how this could have come about — was it perhaps some sort of age-hardening effect? Twiddling the knobs provided at the back of the set by a thoughtful manufacturer produced some startling results, but none of them improved the situation. At the same time, the lectures in Cockcroft Hall had become even more than usually incomprehensible because the operator appeared to be quite unable to get the slides properly in focus. Even at the best of times these tend to be practically invisible from anywhere beyond the front three rows, but now they appeared to be projected through some sort of fog, or perhaps one of those lenses which photographers sometimes use on their more difficult female subjects to give a fuzzy or spiritual effect.

One day I slipped a colleague's spectacles on to see what horn rims would do for my personality. Whatever the frames did or didn't do in this respect, there was no doubt what the lenses did. It was a revelation. I felt like Stout Cortez. I was sure that if it hadn't been raining there would have been no difficulty in seeing a mosquito on the top of the Downs. It was

**B E G
- I N N
- I N G**



OF THE END

obvious what my trouble was, — I needed to become bespectacled, and any age-hardening effect was on me rather than on the telly.

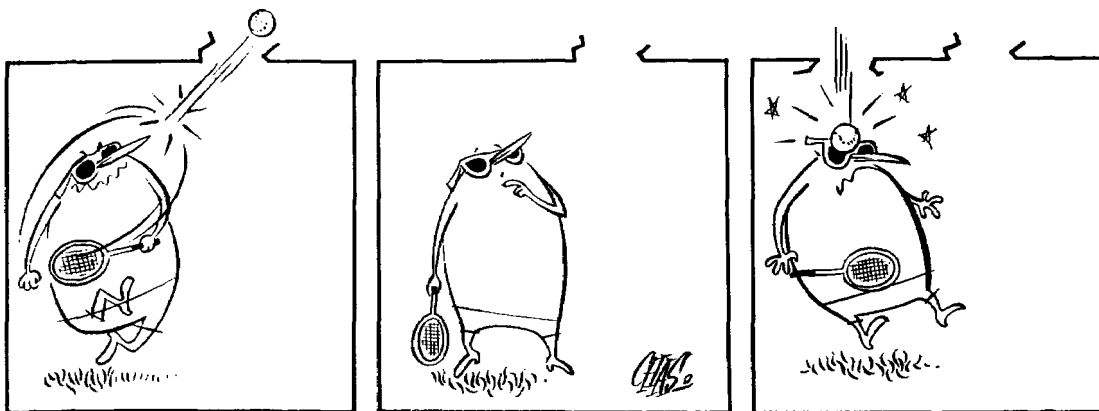
In due course I visited the oculist. After commenting, rather sourly I thought, that statistically I ought to have had glasses ten years ago, my eyes were tested and lenses selected by what appeared to be a process of trial and error. The question of the choice of frame was broached, but I wasn't going to make a unilateral decision on this, and said I'd bring my wife along to share the responsibility. In fact, the whole family came along, and this was a great mistake. Their uninhibited comments

on the effects of various frames on my appearance may have lightened the day of the other customers in the place, but they were in no way helpful in making the decision which was eventually taken.

At last the great day came when I collected the finished article, put it on and drove away from the kerb, full of the delight and confidence of clear sight. Thirty yards further on, I had to brake sharply and whip them off again when both lenses misted over simultaneously and I couldn't see a thing. It was necessary to pull into the kerb, and bring the spectacles up to body temperature before proceeding by putting them inside my shirt.

There is no doubt that life, at distances upward of nine feet at any rate, has taken on a new dimension. The performance of the Cockcroft Hall projector operator has miraculously improved, and I can see the warts on television actors. However, there are disadvantages. Apart from the normal hazards of losing them or sitting on them, they tend to steam up under the influence of powerful emotion. This was particularly noticeable when Brigitte Bardot was on at the local cinema. Moreover, the glasses make close vision much worse, and this leads to difficulties. What, for example, to do when watching television and simultaneously eating a kipper? Does one have Alf Garnett clear and the kipper cloudy or vice versa? It is obviously dangerous to poke around in cloudy food, as I have already done myself some dental injury by biting what appeared to be a portion of meteorite under the impression that it was mushroom. Perhaps one can get bifocals for this sort of thing, but I doubt if the N.H.S. would pay.

It seems that all the benefits of civilisation bring problems in their train.



A NEW BEGINNING

by Old Harwellian D. H. Watson

To most people the thought of retirement is, to say the least of it, disturbing, an Ogre that looms larger as the time draws near, when, after a lifetime of busy activity, one must prepare to leave it all and find new fields of employment. It is a wrench, and a shock to the ego, but it has to be faced all the same.

No doubt, during one's working life, one has often wished for more leisure and the chance to lie in bed of a morning instead of rushing half-awake to catch that bus, or get the car out and go careering across the Berkshire downs to another day's toil.

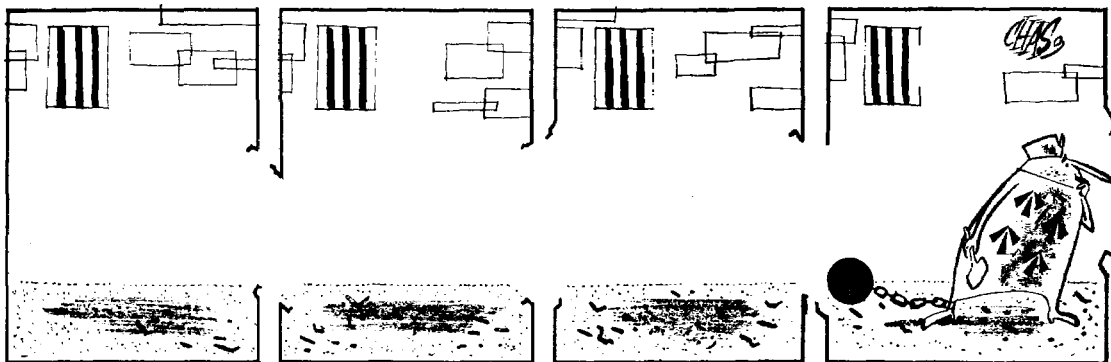
As one who has crossed the bridge into retirement, and sampled its joys, I would say that, providing you are sound of mind and body, it can be very nice. The thing is that, after you have blushing received your Westminster chimes, barometer or television set and made your faltering speech of thanks and bade farewells, then you should begin looking forward, not back. A phase in your life is ended; you had far better think of what you are going to do with so much time on your hands than pine for what is past. I don't mean that you should forget your years of service or the life-long friends you may have made — those will always be with you as happy memories — but it is best to make a clean break and face the future hopefully. At least you won't have to appear on any more promotion boards nor suffer the probings of the Medical Division, although I suppose one should bless them, really, the medical people I mean.

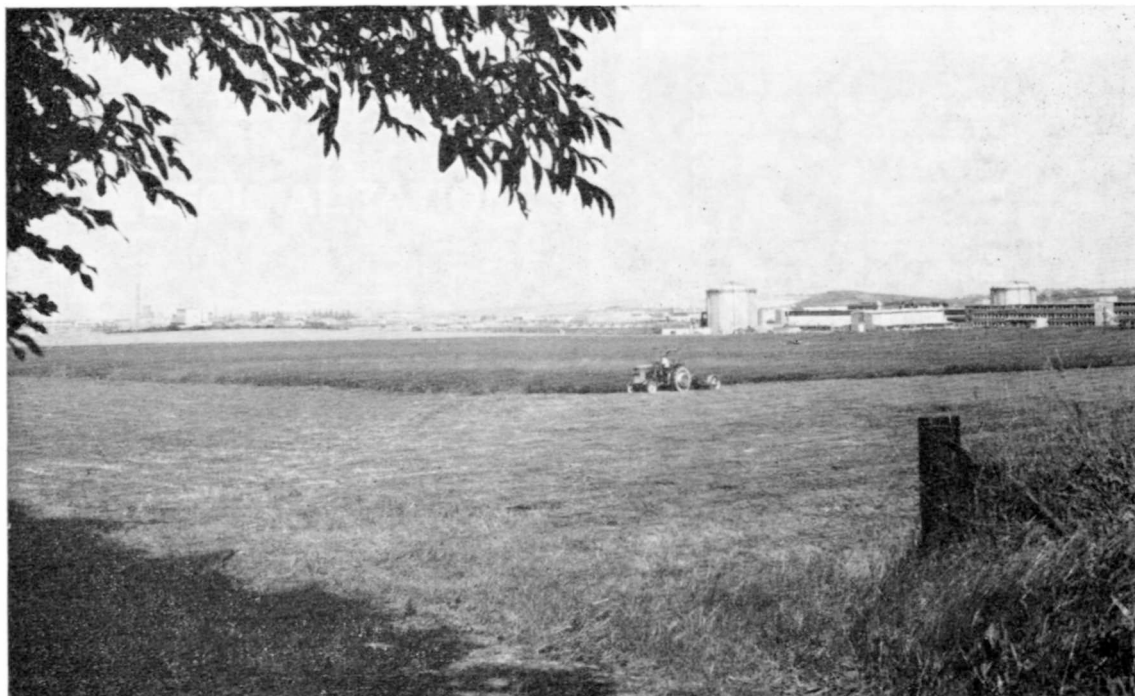
Think of the hours of pleasant relaxation in front of you, and the thought that your life is now your own, and you had better make the best use of it. It is nice to meet up with old colleagues, retired like oneself, and to chat with them over old times, whilst remarking "Oh well, we're out of all that now and gentlemen of leisure!"

You could tour round the country and visit some of those places one has read about, and if you are married take the wife too: she would be only too glad to get away from household chores. Or you could get interested in local politics or other social activities where there might be scope for your executive ability. It is, alas, too easy to let your activities degenerate into taking the dog for a walk and changing the library books. So long as your "superann" cheque keeps popping through the letter box regularly, don't worry.

One thing, I feel, you must *not* do is to become a slave to gardening. Hand digging and muck spreading were alright when you were younger but become a bind as you grow older. The lawn mower you should leave to the junior members of the family.

Retirement can be fun, bags of fresh air if you want it and time to breathe it in. Oddly enough, the writer still gets up in the morning early. The habit of early rising whilst at work is not easily broken. I think it is possible for most people to make retirement a success, but there should be no looking back with regret, just a happy enjoyment of a new life.





AERE HARWELL

For his researches J. M. TURNEY was given the help of the Establishment, but opinions expressed are his own in this geographical appraisal.

HOUSING AND TRANSPORT

From the beginning as a matter of policy, the establishment has never been allowed to grow into an "Atom City". "We have seen Los Alamos" (New Mexico), one senior scientist said, "and we were not going to have anything like that here". (1). The importance of this decision cannot be over-emphasised, since instead of an inward-looking and isolated community emerging, the population has been dispersed into the neighbouring towns and villages (Fig. 1) with consequent repercussions on the growth and economy of such settlements.

On the site, however, there are eighty houses which formed part of the legacy of the R.A.F. station, and two prefabricated estates totalling 298 houses on the north and south sides of the establishment as well as accommodation for

two hundred single persons in converted R.A.F. hostels. On the site a small shopping centre serves this population, but from my own survey in July, 1966, it was found that most of the occupants had not lived on site for more than five years, that most found a car a necessity, and most used the site shopping centre for groceries only, supplementing this by visits to Didcot, whilst larger purchases were split between Oxford and Reading.

Up to a point, the distribution of employees can be studied in relation to the housing policy of the Ministry, who had to cope with a considerable influx of newcomers. The Ministry was under considerable pressure and obligation to house the growing numbers coming to Harwell. Thus, a decision was taken to build

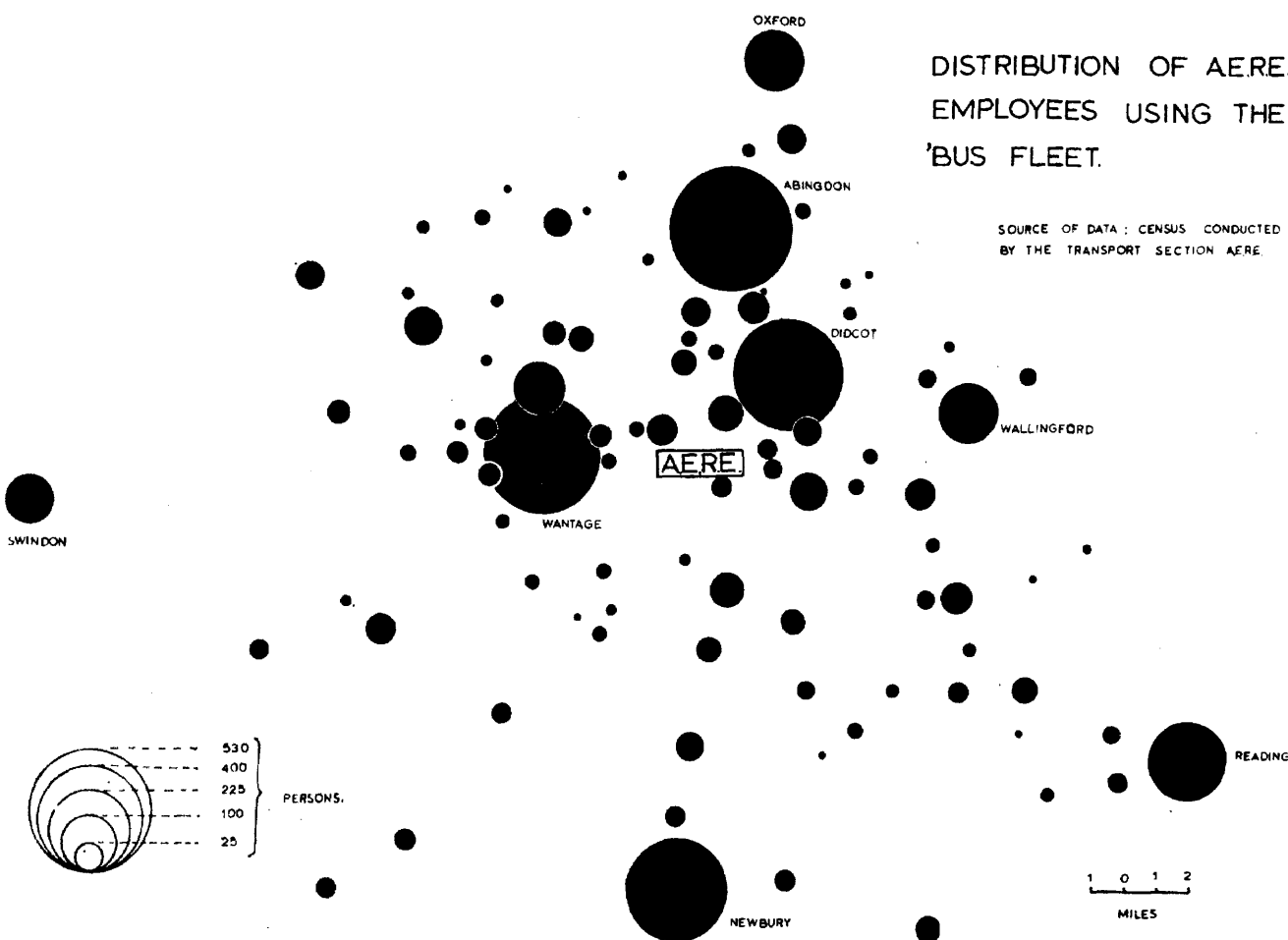


FIG. 1

housing estates in the towns, and Abingdon, Wantage and Didcot formed obvious choices. By 1951, 462 houses had been built in Abingdon, and thirty in Didcot (2).

At this stage the Ministry of Supply, responsible for housing, made overtures to the Local Authorities, and requested that they take the responsibility for building houses for A.E.R.E. employees.

As a result of a progressive town council, Abingdon became the chief recipient. Recognition of the benefits which Harwell could bring to the town led them to offer to provide housing for Harwell employees, and consequently Abingdon became, more than any other town, closely associated with the Authority.

Perhaps the biggest single factor which

prevented Didcot, the nearest of the "towns", from taking advantage of the growth of A.E.R.E. was the administrative anomaly that it falls under the administration of the Wallingford R.D. and thus has only parish status. However, despite its lack of administrative independence, 135 houses were built in Didcot during the 1950's.

In 1954, two factors changed the official attitude towards housing. The first was the huge population increase, when between 1954 and 1958 the A.E.R.E. employees doubled. Secondly, for Harwell there came an end to powers of compulsory purchase of land and automatic planning permission. By this time, 900 A.E.R.E.-owned and 500 Local Authority-owned houses were still inadequate, and so once

"The general appearance of the Establishment resembles a cross between a factory estate and a University, and this description reflects the atmosphere of the place." →



View of the site from the East. The Tandem Generator can be seen on the left of the picture.



View of the site from the North West. BEPO stack can be seen in the centre of the picture with the Tandem Generator in the left background.



View along Becqueral Avenue with reactor area left foreground.



Close-up of the main reactor area with DIDO reactor in the right background and PLUTO reactor in the foreground.

again the Authority reverted to direct building. By 1956, 120 houses were added to Wallingford, 76 at Wantage, and 66 at Abingdon, which ended the building programme. From 1956 onwards, the Authority encouraged employees to buy their own houses, through an assisted house purchasing scheme.

The single person problem was solved by extending the site hostel to house two hundred, and by 1963 a new hostel at Abingdon held three hundred employees.

The remote location of the Establishment and the policy of dispersal of housing necessitates the operation of a 'bus fleet comparable in size and organisation with that maintained by one of the smaller municipalities. (3). In August, 1966, the transport section operated 35 buses of a total of 103, the balance being made up by contractor vehicles concentrating on the longer routes, together carrying 4,294 passengers per day. (4). They cover 41 routes on which are 40 picking-up and setting-down points. (Fig 2).

Hence, the operating area of the transport fleet is within an area bounded by Oxford, Newbury, Reading and Swindon. (Fig. 1). Partly due to the A.E.R.E. bus fleet and also to the licensing division of the area by various public 'bus companies, the local public 'bus service in this area is inadequate. The railhead at Didcot, however, utilised by visitors and by staff from London, has encouraged the growth of a flourishing taxi service at Didcot.

The road system provides only one direction of access to the establishment along the A.34. Despite the fact that long-distance traffic also uses this road, the 'bus fleet can clear the site in three-and-a-half minutes, although it may be delayed on the A.34 for a while. Recent road improvements at Rowstock crossroads and the East Ilsley By-pass, both completed in the latter half of 1966, have improved traffic flow. Although two alternative approaches have been considered, Harwell remains with one approach only.

In general, road construction in the area has

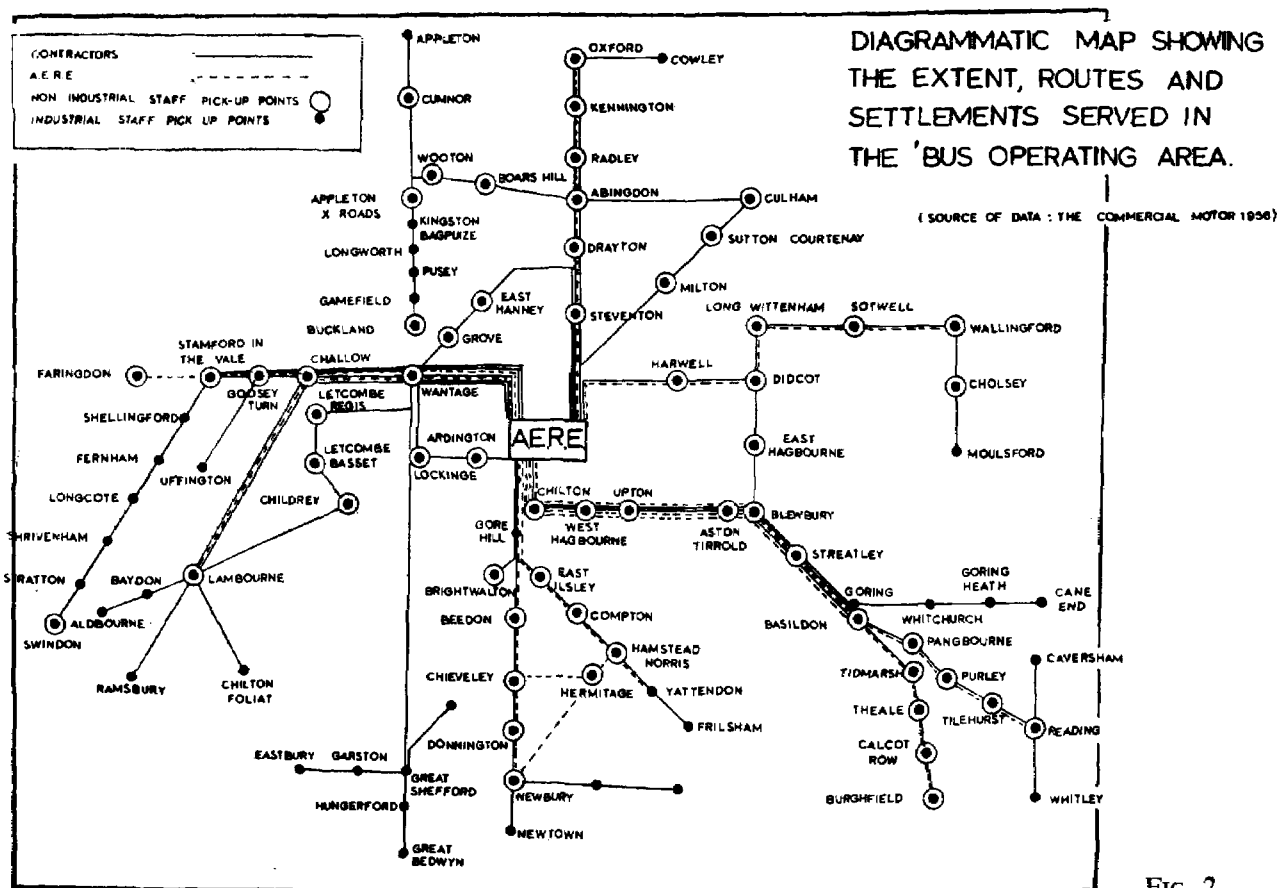


FIG. 2

not responded to population increase, and is grossly inadequate. Paradoxically, the chief offender is the A.34. "A glorified country lane taking major trunk road traffic" is a popular description, and even the Ministry of Transport admits that traffic on the A.34 is growing at almost three times the national growth rate. (5). Clearly, the problem of access to A.E.R.E. will become more difficult unless some major improvement takes place within a reasonable time.

IMPACT ON THE LANDSCAPE

The chief physical characteristics of the site are its relative flatness, and the fact that the bedrock is chalk, which provides a firm base for the research buildings. In addition, the downs have a distinctly dry climate. This is an advantage, since certain equipment operates under carefully controlled climatic conditions. Excessive moisture would have created difficulties. Finally, although the Establishment is situated at the foot of the Downs, there is no run-off problem due to the porous nature of the bedrock, and the water table is at least 200 feet below the surface. These physical advantages did not seem to weigh heavily in the minds of the Authority as, given the financial resources, most of the possible physical obstacles could have been overcome.

Prior to the development of the Establishment, the downland was primarily a fairly sparsely inhabited rural area focussed around the market towns of Abingdon and Wantage — Didcot being a product of the railway age. It was an area of arable cultivation, punctuated by orchards located on the Greensand patches. A.E.R.E. has not altered the agricultural scene, save by attracting agricultural labour to its employment. The large holdings, however, have been able to introduce mechanisation without difficulty.

The Establishment has virtually urbanised a crescent of the Downs stretching to the Ridgeway. It would be difficult to argue that the establishment improves or blends in with the

landscape. (6). Nevertheless, considerable energy has been spent in making the Establishment as pleasant an environment to work and live in as possible. Landscaping has taken the form of encouraging green open spaces and gardens, and trees have been planted extensively. Here, due to the thin top soil, trees cannot grow to any size, and so periodically the larger trees are uprooted and new ones put in their places. But, apart from its aesthetic appeal, this policy is practical since it prevents compacted chalk from forming into wind-blown dust. The general appearance of the Establishment resembles a cross between a factory estate and a University, and this description reflects the atmosphere of the place.

Excavation of large pits for research buildings posed a problem of disposal of the sub-soil. Usually, it is taken and deposited in gravel pits in the vicinity. The top-soil is kept for re-deposit on the site as the soil is so thin. However, another method of disposal was applied with some degree of success. This occurred when the Proton Synchrotron necessitated the excavation of a huge hole some 100 yards in diameter and 30 yards deep. With this material, two artificial hills were created, moulded, soiled over and turfed to create a pleasant landscape effect. (7).

On a wider scale, one of the most obvious and immediate landscape effects of A.E.R.E. was due to the Authority's policy in the layout of their housing estates. They are designed on the "open front system", a trend imported from Canada, which has spread throughout the area.

It is to its credit that the Authority has set a good example by taking great care to provide a pleasant environment in its estates. They are, however, costly in terms of land used, due to the low density of housing; e.g. thirteen to the acre at Wallingford.

The basic idea is to eliminate straight stretches of roads, and to have wide expanses of unenclosed open grass in front of the houses, and where possible natural features, such as hillocks, valley streams and trees, have been preserved.

To be continued

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Does this 'bus go to...?

Reg Wilkinson, M.R.C.



The recent poems about coaching mysteries which appeared in the Spring issue of *Harlequin* brought to mind an incident which took place in February, 1963. It concerned a motor coach, or double decker 'bus to be exact, and took place during the Long Winter which, no doubt, is forever engraved upon the memory of most Harwell inmates!

On the evening in question I arrived at the bus park at the usual time, only to find that the Wantage bus, in which I was particularly interested, had not yet arrived. The potential passengers were standing in a disconsolate group, stamping their feet and filling the air with their frosty breath as they grumbled about the weather, the inadequate 'bus service and anything else that took their fancy. As departure time gradually drew nearer one or two of the crowd sidled off and managed to find places on other 'buses bound for Wantage.

Departure time came and our bus still had not put in an appearance. The other buses pulled away, and the sound of grumbling and stamping feet seemed to grow louder. But gradually as the tail lights of the last bus disappeared in the direction of the A.34 an unusual silence settled over the bus park, broken occasionally by a cold breeze which whispered its way in and out of the heaps of snow dotted around the place. The light from the mercury lamps, reflected from the dirty snow, gave the

bus park the eerie appearance of a lunar landscape. Over on our left towards the Library Gate another disconsolate knot of people stood. No sound came from their ghostly figures as they also waited for a late bus.

Quite suddenly, as if from nowhere a double decker bus appeared and made its way to our stop. It was red and therefore from the appropriate 'bus company', but it was not the usual 'bus. As it stopped the conductor made his way on to the platform from the interior of the bus. At first glance he appeared to be dressed in black from head to foot with only his eyeballs and white teeth shining from his head! Then we realized that he was a West Indian, and not the usual conductor at all!

After hesitating for an instant the people at the front of the crowd climbed aboard and the rest of us followed, glad to be out of the wind in the comparative warmth of the 'bus. The driver lost no time, and as soon as the last passenger was abroad we were on our way. As we left the bus park we passed the other crowd of people, their dark figures outlined against the snow.

There was little traffic on the main road and in no time at all we were approaching Rowstock Corner; obviously we would soon be home. Then catastrophe struck! Instead of turning left for Wantage the bus thundered on towards Abingdon!

A fraction of a second passed, then the up-roar started. A variety of cries rent the air: -

"Stop the bus, I want to get off!"

"This has never happened before!"

"Where the ——— are we going this time?"

"Doesn't this 'bus go to Wantage?"

"The man's mad!"

"It must be because of the weather!"

By this time various people had pressed all the buttons in sight and a peal of bells assaulted the driver's ear drums. The bus drew to a rather abrupt halt just before The Pack Horse.

At this point several passengers, who had either slept through the whole thing or who had been reading and had not noticed anything unusual at Rowstock, jumped to their feet assuming that they had arrived at Wantage. They were brushed aside by their more alert companions who were galloping up the gangways on both decks intent on getting at the 'bus steward, the 'bus conductor, or both.

The conductor obviously thought we had gone mad, especially when we all began asking if the bus went to Wantage.

"No, man, this here 'bus is going to Wootton", he politely informed us.

"Wootton?" The word passed through the bus from lip to lip spoken with disbelief as though it was the name of a relatively unknown and uninviting planet.

By this time most of us were speechless, and the 'bus steward was able to converse freely with the conductor and with the driver who had made his way to the rear of the 'bus to find out the cause of the disturbance. I'm not sure how he managed it, but the bus steward persuaded the driver that it would be a good idea if he took us to Wantage. He informed us of this, and as the bus started off once more we gradually settled down.

We passed the Pack Horse and turned into Featherbed Lane, and in next to no time we were once more on the road to Wantage. No further incidents took place and we finally arrived at our destination at about half-past six.

I often think about the crowd of people left waiting for the Wootton bus. Did they manage to persuade the driver of the Wantage bus to take them to Wootton? Perhaps their ghostly figures can still be seen on winter evenings at that particularly spot in the bus park. Do they silently stamp their feet and mumble under their breath as they wait forever for the bus that never comes? ★

CONCLUDING

THE HOMOLKA GUIDE TO

HARWELL TYPES

PART III

In the last issue we touched upon the general types and broached the subject of dress and habit as a guide to identification. Sub-divisions (a) Pseudo and (b) Normal were left over for this edition.

At the onset we must warn our readers that the habit study of the Pseudo Type is not an easy matter. They exude a sort of poised uneasiness, but this might be a bit misleading, as the same condition is seen in Administration Types with holes in their socks. One well-defined characteristic, however, is the air of social adaptability. For example, their method of addressing others consists of five standard phrases: (1) "Sir", for all grades above P.S.O., (2) "Old Chap", for all grades immediately below P.S.O., (3) "Cock", for all immediate superiors, (4) "Bog-eye" or "Stinker" for all equals and (5) "My good man", reserved for inferiors.

Pseudo Types are always just about to do something, such as organising a dance, making up a standard solution or paying their tea-money. They never actually get around to doing it, as they are too busy being just about to do something else. This delightful air of great expectation is decidedly one of the hallmarks of the Type.



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“... AN AIR OF GREAT EXPECTATION”

The Pseudo class is often mistaken for Types (2), (3), or (5), i.e. Chemists, Physicists or Very Rare, as they give the impression of knowing much more about chemistry and physics, but they are never mistaken for the Engineer or Administration classes. This may be on account of the rather exotic outside dress, or, more likely because of the spotless laboratory coat, usually with turned up collar and top pocket crammed with pens and seven figure logarithms. Lastly, Pseudo Types are generally unmarried. Getting married is presumably another thing they are always just about to do. On the whole, this Type is rather likeable, although unpredictable. Summing up, we should describe the general characteristic as one of pregnant aimlessness.

Normal Types are perhaps the most uninteresting psychologically, although some odd habits might be detected. Unlike other Types, their habits have an essentially practical purpose. In this category we might place the people who keep the Establishment ticking over, e.g. Plumbers, Electricians, Joiners, etc.

Identification by dress is rather inconclusive as they may well be mistaken for Experimental Officers with car trouble. Short, white duffel coats might be a pointer, but here care should be taken not to confuse them with female Geneticists going for lunch.

It is not widely appreciated that Plumbers, Joiners, Electricians, etc., are rather timid people outside their environment and are afraid of venturing out alone. This should explain to the visitor why the type who comes to fix the fuse is always accompanied by a friend carrying the fuse wire. As they dislike being cut off from their associates for very long, they are invariably joined before long by two more.

The timidity of the Normal Type, however, is restricted entirely to travelling. At work, their habits are unmistakable. They, of all types, know exactly what they are doing and this sort of fruitless, unswerving dedication to the business on hand is definitely the thing to look for. They will cut down pipes, rip up floor boards, knock holes in the wall and cut off the water supply without batting an eyelid. The awe-inspiring and intimidating effect that this has on all other Types is well worth observing.

Before examining in more detail the idiosyncrasies of the various classes we might briefly draw attention to some smaller sub-groups not, strictly speaking, coming under the Types mentioned.

Medical Types, for example, are a small, but well-defined, lot embodying many of the worse aspects of the main Types. Their dress, as a rule, is unspectacular. The only characteristic feature in this respect is the laboratory coat. This is always snow-white — even whiter than that of the Pseudo class — and gives a rather disturbing impression of purity and extreme hygiene. The more experienced members have carefully placed spots of blood or disinfectant on the coat to enhance the whiteness.

Concerned as they are with the ultimate health and well-being of their fellow creatures, Medical Types have invariably a rather cynical

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and detached outlook. This is reflected in their habits which should be watched for carefully. They can be seen wiping scalpels or sticking hypodermic needles into various things, discussing at the same time the latest Test score. They also have the rather clever knack of being able to sleep with their noses resting on microscopes. A great deal of their time is spent on an occupation called "getting-things-ready" There is some slight analogy between this and the chief occupation of Pseudo Types, only it is all done with terrifying efficiency. Broadly, we should say the main characteristic is a sort of defined coarseness. It is worth noticing that the less human of the Medical Types are kept in a special enclosure, outside the Establishment altogether, along with monkeys and rats. As yet, nothing much is known about this group and visitors are advised to avoid any attempts at close study until a proper survey has been carried out.

Under the smaller sub-sections we might also place the Protective Types, embodying Police, Firemen and Safety Personnel.

The dress of Policemen and Firemen is self-evident, but a word on habits might be of interest. Even out of uniform, Firemen can usually be identified by their air of patient frustration. Due to a clause in the Official Secrets Act, large fires are forbidden in the Establishment. The permissible small ones are invariably put out by the types who started them and, accordingly, Firemen spend much of their time filling up empty fire extinguishers which they did not even have the satisfaction of using. This engenders the characteristic look of wistful longing and also may be the reason why they often smoke heavily.

Policemen might possibly be placed in the Normal Type group, but we prefer to list them in the sub-groups. They resemble Medical Types in having a rather cynical, analytical outlook. This is understandable when we consider the large quantities of Harwell faces which pass in untidy profusion past them each day. One possible unique characteristic worth



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looking for in Policemen is the extraordinary chameleon quality they nearly all possess. The visitor, no doubt, has been surprised to find each time he passes through a gate that there is apparently a different policeman there. This lightning change gives wrong-doers a false sense of security. In effect, it is the same constable each time, who remembers in minute detail how many A.E.R.E. bicycles you were riding when you went out. This versatility in appearance is certainly well worth observing. Actually, rumour has it that there are really only six policemen in the whole Establishment — each capable of many transformations.

Lack of space prevents us giving the promised detailed habits of each Type. The detection of unmarried Divisional Administrative Officers has been withdrawn as too difficult for the novice because there are too few characteristics to differentiate them from married ones. In a future issue we hope to discuss their eating and digestive foibles and also speaking mannerisms.

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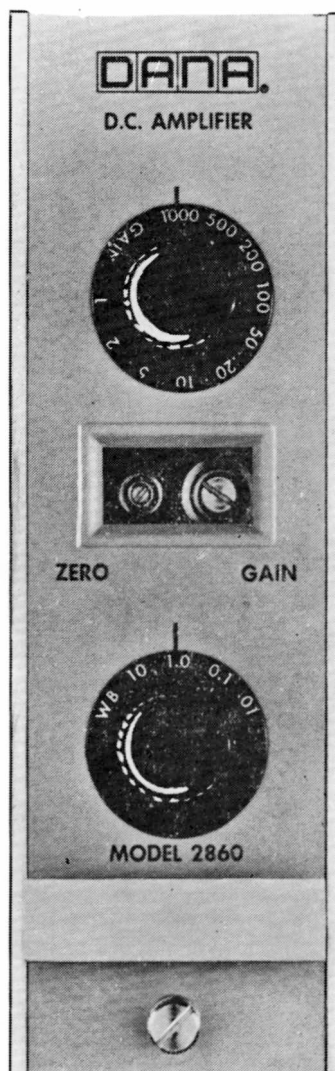
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A.E.R.E. RECREATIONAL ASSOCIATION APPRENTICE ASSOCIATION

Although membership of the Apprentice Association is open only to serving apprentices, many of the organised activities and functions also enjoy the support of interested non-members. The Association aims to provide entertainment and sporting activities, to instigate and help local organisations in charity efforts and to work in conjunction with other apprentice bodies.

Money has recently been raised for charity by apprentices taking part in the Portway Shelter Walk and the Bristol to Weston Walk, and at present the Association is organising a large-scale charity appeal in Abingdon.

On the lighter side the activities over a period of six months included an active (and competent) football team, three organised rally-treasure hunts, two discotheque parties, a barbecue, a theatre trip to London, an Open Day Exhibition, a trip to the Entertainments Centre at Bristol, a successful Spring dance and rugby and cricket matches at Winfrith.

Secretary: R. Hutt.

ART GROUP

The Art Group was formed in 1957 with the primary object of exhibiting works of art by members of the staff and their families. Since 1957 an annual Exhibition has been held in the latter half of September. In recent years the exhibition has been held in the lounge of Grimsdyke House, Curie Avenue, A.E.R.E., for a fortnight. The Exhibition is open to the public and has always received favourable notice in the local press. There is no membership fee as such, but there are entry fees for exhibits. The proceeds of the show latterly have gone to aid "Guide Dogs for the Blind" and over £100 has already been contributed to this worthy cause. The dates of the Exhibition are advertised well beforehand in the "A.E.R.E. News". For further information please apply to G. F. E. Williams or Don Warren, both of Hangar 10. **Exhibition dates for 1968 are 13th—27th September.**

AMATEUR RADIO CLUB

The Amateur Radio Club meets in the Social Club at 7.30 p.m. on the third Tuesday of each month with a programme of lectures and demonstrations. The Clubroom is equipped with a KW-2000A transceiver which may be used by licensed members. For further information contact:- HARWELL — Mr. C. Sharpe, Ext. 4026; CULHAM — Mr. D. Boffin, Ext. 359. Secretary: Mr. Jack Galpin.

CROQUET CLUB

The Croquet Club has a full-sized lawn conveniently sited in the North Sports Field and close to the Main Gate. All interested in the game are welcome and beginners are particularly invited to come along to the lawn and try their hand.

Croquet is not confined to elderly dears or retired colonels, and at A.E.R.E. a fairly mean game is played at times. "Bust 'em up" became the favourite cry of a visitor from Pakistan, and others from Australia and the States have returned home with the intention of spreading the gospel among the natives.

The Annual Subscription is a mere 5/- and games are organised both during lunch-time and after working hours. League and knock-out competitions are currently in progress and it is hoped to establish a handicap system.

Secretary: R. G. Garside. Ext. 2832.

SOME AFFILIATED CLUBS AND SOCIETIES

Go is an ancient Chinese game played with a board and a set of stones.



GO CLUB

Go is an ancient Chinese game played with a board and a set of stones. The intellectual demands of the game are similar to those of chess. However, a carefully constructed handicapping system allows players of widely differing ability to have an interesting game.

The club meets for play each Wednesday lunch-time in Room 1 of the Social Club. Beginners are welcome and instruction is given.

This year club members played in the British Go Congress, and one member, Dr. C. F. Clement, won the prize for his Class.

HORTICULTURAL SOCIETY

The Society is affiliated to the Royal Horticultural Society and each year for two days in mid-September holds a Grand Autumn Show of Flowers, Fruit, Vegetables, Baking, Preserves and Homecrafts. There are now 22 magnificent challenge trophies to be competed for, the total value of which is over £300. There is also an annual outing to a place of horticultural interest, e.g. the R.H.S. Gardens at Wisley, Syon House, etc. In addition members may obtain plants and garden sundries at reduced rates from several local firms. The Society over the past ten years has raised some £200 for the Gardeners' Royal Benevolent Society. Membership is only 2s. 6d. per annum. For further information please apply to the Secretary, S. H. Dixon or to Mrs. Miles (Trading Secretary). **Show dates for 1968 are September 19th and 20th.**

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- Between 1920 and 1963 there was a threefold increase in tobacco consumption in this country.
- Based on the standard rate of income tax, you have to earn about £150 a year in order to buy 20 cigarettes a day.

So at last they have done it, God bless 'em. Scientists working for the Tobacco Research Council have apparently shown that smoking may, after all, be beneficial to health. If you are a smoker, they say, it looks as though your body may be able to get rid of potentially harmful substances like pesticides sprayed on your food whilst it was being grown, or diesel fumes breathed in from our polluted streets, much more quickly than can a non-smoker's.

And then, of course, there are those smokers whose nerves are perpetually on a razor's edge. Withdraw tobacco and they will topple over into a state of psychological illness which has to be treated by potentially dangerous drugs.

Obesity too must not be ignored. Doctors are always screaming about those unnecessary pounds of flesh. Very harmful to health, they say; so it counts for something to learn that non-smokers are, on average, 3—4% heavier than their puffing brothers and sisters.

How do these advantages weigh against acknowledged harmful effects of smoking?

The photograph above of Dylan Thomas is reproduced by permission of the publishers of 'Under Milk Wood'.

40,000 deaths a year is one estimate I heard recently for the tobacco toll in this country. This compares with a mere 8,000 road deaths, and takes no account of the years of sickly suffering endured by chronic bronchitics.

Lung cancer is only one part of the story. The importance of smoking in causing coronary thrombosis has yet to be determined with certainty, but it is generally believed that heavy smokers double their chances. This is running a much smaller risk than for lung cancer — where the very heavy smokers may increase their chances by anything up to 40 times. But it should not be ignored, as there are more than 4 times as many coronary cases as of lung cancer.

The list of diseases said to be at least partly associated with smoking is longer than you might think. It includes tuberculosis, peptic ulcer and cancer of the bladder. But perhaps one of the saddest links is with pregnant women.

According to Professor Russell, of Sheffield University, 4 babies in every 1,000 die because they are unfortunate enough to have smoking

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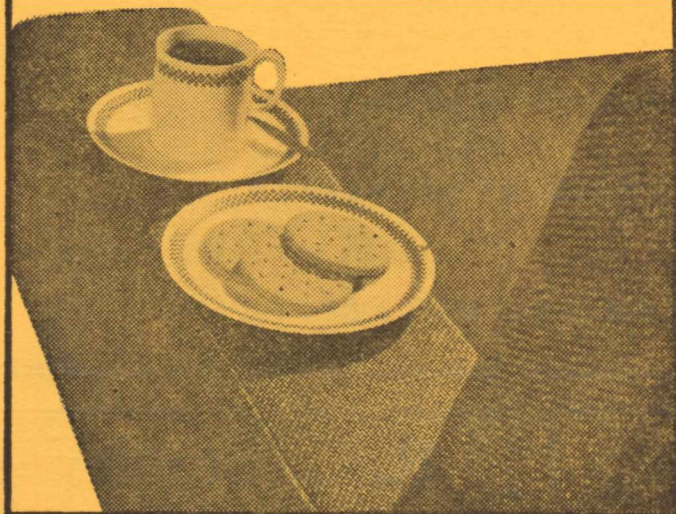
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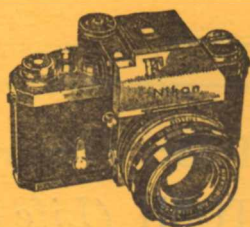
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Social considerations are often forgotten. Those who smoke lose their sense of smell together with their sense of taste. The air in restaurants, theatres and single-decker buses takes on the same obnoxious smell that clings to the clothes of the smoker.

mothers. Smoking mothers who have a slightly raised blood-pressure are twice as likely to have a dead baby as are comparable non-smoking pregnant women. And smoking mothers who have bleeding in the early stages of pregnancy are more likely to have their babies prematurely — which reduces the chances of survival.

There is not much doubt in my mind which side the scales come down on. If you agree and are a smoker you will no doubt ask what you are supposed to do about it. "I tried, doctor, and after 5 days my wife implored me to give up the attempt — I was intolerable". Or, rather less convincingly, "I tried, and lasted just two hours".

Statements like these spurred me to look into the problem. Anti-smoking clinics have appeared all over the country in the last few years, and the results have been very variable. But the most successful clinic I learned about — at Newcastle-on-Tyne — managed to assist more than 60% of its patients in giving up smoking for six months or more. And I feel that if a smoker can do without for six months he has only got himself to blame if he starts again. The temptation will occur fleetingly for as long as a year or two, but it should be possible to resist it without causing one's wife to sue for divorce.

The Newcastle clinic saw its patients separately, whilst others preferred group therapy. At Harwell we started off in 1963 with small groups, but soon found this was not very successful. Then two years ago we tried the individual approach, and this has proved more promising.



In one respect, however, our experience differs from elsewhere. Other doctors who have tried hypnotism as a means of easing the strain have condemned it as being valueless; but some at least of our customers say that this form of therapy has helped to make life tolerable.

If you do decide to try and stop smoking, may I give you a word of advice? First, don't be half-hearted. A failure is demoralising, and nothing less than a full-blooded effort is likely to succeed. Second, choose a favourable time. If you know you have a lot of mental strain coming up, wait until it is over.

Finally, remember that smoking obeys an all-or-none law. If you want to win it is best to stop in one fell swoop. Planned withdrawal is doomed to failure.

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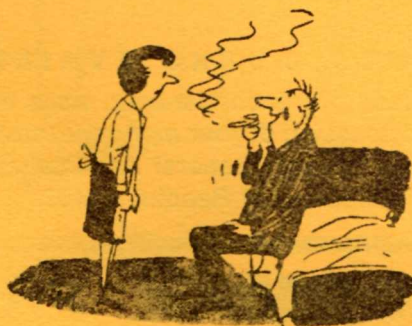
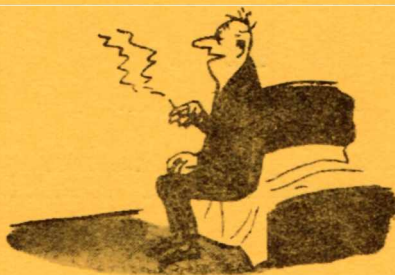
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With such roots and a long harmonious affiliation to the Recreational Association progress and development has proceeded steadily over the years and the club is in a happy position to offer excellent facilities at extremely moderate costs.

The facilities comprise four hard and four grass courts with pavilions in two locations; tennis balls are provided on all courts throughout the year.

Club meetings are held on Tuesday and Thursday evenings and Sunday afternoons throughout the season. Monday evenings are reserved for match practice and match fixtures are played usually on Wednesday evenings and Saturday afternoons. Private play is possible on courts not reserved for club functions, and one hard and one grass court can be reserved for members wishing to make advance arrangements for private play.

The club has two men's and one mixed team in the Oxford league and one men's team in the Newbury evening league, a number of friendly fixtures and tournaments are played during the season.

Playing standards range from the beginner to those of county class: coaching is available when sufficient numbers warrant this facility.

All who are interested in serious league tennis or friendly social tennis are welcome, and will find a happy club atmosphere in which to enjoy tennis.

Further information from:

Mr. B. F. Greenfield (Secretary), Building 220;
Mr. K. Mell (Treasurer), Building 521, R.R.D.;
Mr. W. Lilley (Chairman), Building 393.7.

MODEL CLUB

The club was formed at AERE in 1960 to provide facilities and help in all fields of model and general engineering hobbies.

The aircraft section is at present the largest. All types of aircraft are built solid scale, gliders, rubber and engine powered, control line and radio control.

The railway section has a large lay-out with its rolling stock in the club's second room.

A six lane electric car track has been built by the club's model car enthusiasts along with a 6ft. high hill climb with over 40ft. of track.

Quite a lot of electronic work is being carried out at the club some of it in conjunction with other sections.

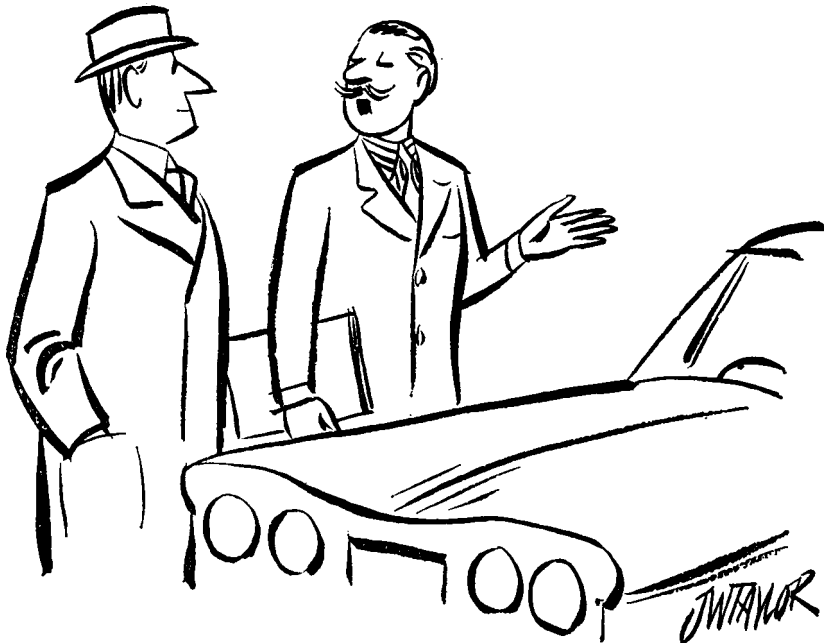
Bulk and direct purchase of materials is encouraged to help keep the costs of members projects to a minimum. A good selection of balsa wood is kept in stock and is available to members at reduced prices. Club nights every Wednesday. Juniors 6.30-7.30 p.m., adults 7.30-10 p.m. Visitors are always welcome on club nights.

Subscriptions: juniors 10/-, adults £1, per year.

Secretary: L. B. Hart, Ext. 2762.

MORE HARWELL LEISURE ACTIVITIES IN THE NEXT ISSUE.

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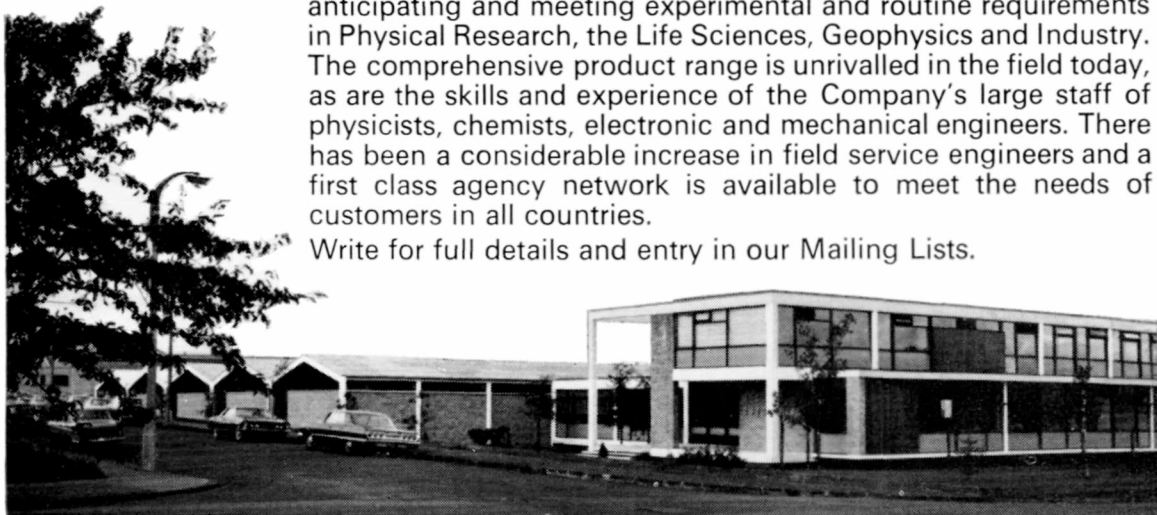
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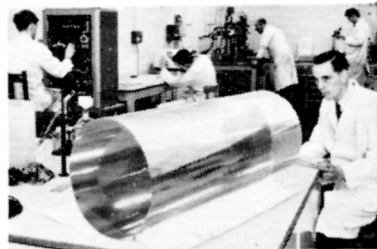
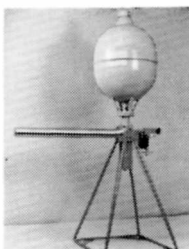
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Plastic scintillator detector (right), sheets now available up to 24m in length
Cryostat system (left) for use with semiconductor detectors

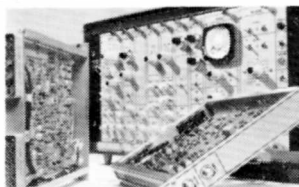


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Research and development in progress at Edinburgh (right)
International Series modules (left)

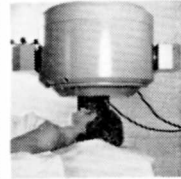
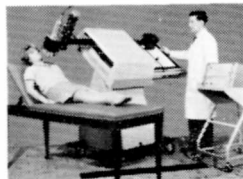


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Scintiscanner, for general medical scanning (middle)
Whole human body radiation monitor (left)

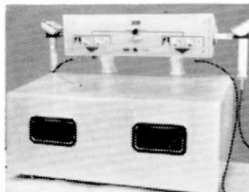


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Foot Monitor (right)
Neutron Monitor (middle) Hand and Clothing Monitor (left)



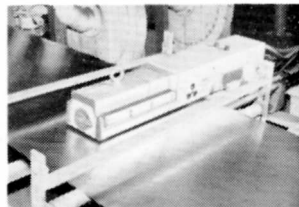
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Level
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Moisture and Density Measuring Equipment (right)
Measuring head carrier on continuous annealing line (left)



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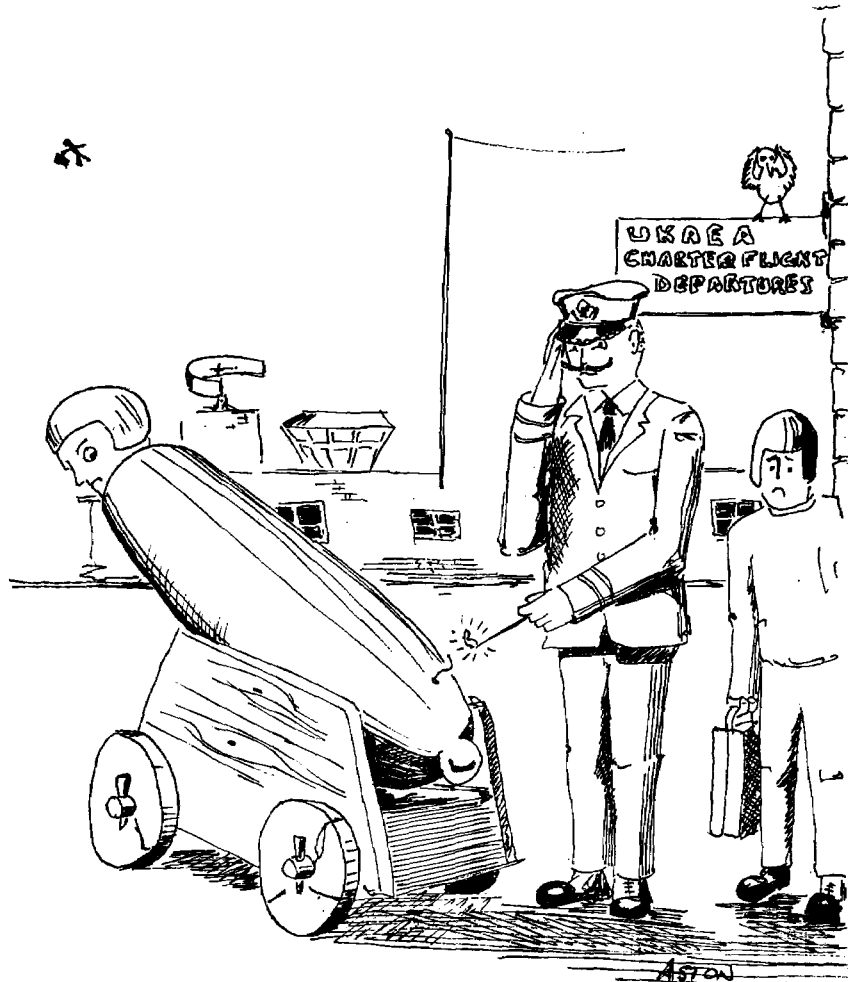
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