HARLEQUIN

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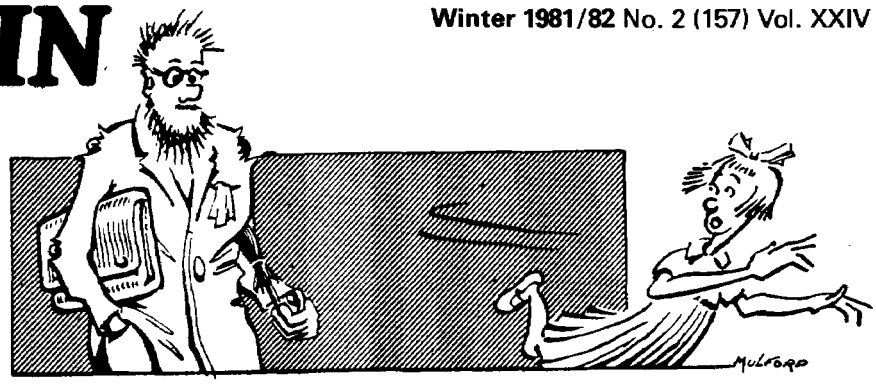

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Magazine Address Bldg 328, AERE HARWELL, Oxfordshire

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In This Issue

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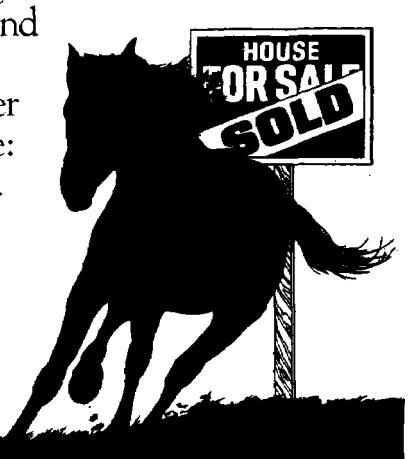

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EDITORIAL

"LET EINSTEIN BE!"

The epitaph that Pope wrote for the 17th century founder of modern physics runs: "Nature and nature's laws hid in night: / God said 'Let Newton be!' and all was light".

Yet did Newton reveal so much? Take his concept of inertia: "A body continues in a state of rest except when made to change that state by a force". This is the truth we rediscover every Monday morning and after every holiday — when we return to work with a new speed and a new direction!

Then Newton's Third Law of Motion: "To every action, there is an equal and opposite reaction". A Latin proverb had already stated: "Every advantage has its disadvantage". And Seneca, the Roman, had said: "There is no evil without its compensation".

Fixed laws, however, cannot be applied to human behaviour because it is so unpredictable. Since Newton there seems to have been an increasing tendency to do this, and to expect Utopia from science and a new religion of progress. This belief in a world getting better each year in every possible way gave comfort only to recent generations. Today, science faces the result of having appeared to offer too much.

This began with a couplet of Pope's and could close with J. C. Squire's sequel: "It did not last; the Devil howling 'Ho!/ Let Einstein be!' restored the status quo".

The nuclear age, however, need not be seen as the work of "the Devil", if now we could come to grips with human nature and open up a new age of enlightenment — but it would be too easy to say: "Passed to the social scientist for action!"

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HARWELL: ITS IMPACT ON OXFORDSHIRE

by John Clarke,
member of Oxfordshire County Council & Vale of White Horse District Council, formerly HARWELL'S Financial Controller.

Oxfordshire has no nuclear power station, no uranium field, no deep sea oil rig, nor any of the major developments to which Harwell's research has been crucial. Perhaps the provision of radioisotopes to the hospitals has been the biggest local result of research. So the impact on Oxfordshire has come mainly from the extra population and money which Harwell has brought. For the purpose of this article 'Harwell' cannot be confined to AERE, but must include the organisations which have come to Oxfordshire because of AERE: not only the SRC's Rutherford-Appleton Laboratory, MRC and NRPB, but also the ARC at Letcombe and the Fusion Site at Culham.

Between 1931 and 1951, the population in the villages and parishes near to Harwell doubled while there was actual depopulation in other areas of the Vale of the White Horse. The 100% increase applies very nearly to both Abingdon and Wantage. Then from 1951 to 1961 the areas close to Harwell had only a small expansion. With the increasing use of the family motor car, Harwell workers spread over a wide area. Wantage and Abingdon had only a 25% growth, and the biggest increases were in Didcot and those southern parts more affected by London than by Harwell. It is difficult to isolate the impact of Harwell, because once transport was freely available there was an attraction from the University, from the car industry to the north and from London the south-east. One effect, however, mainly attributable to Harwell, is that in 1961 Abingdon, Wantage and Wallingford had 8,000 children under four years of age, whereas from the standard distribution of the nation's population one would expect only 6,500 children. The early Harwell generation was quite prolific!

Housing

The RAF left 203 houses on the site, and 200 aluminium bungalows were added in 1947/48. These 'temporary' prefabs are still giving excellent service. Those who canvass the area at election time know that whenever there is a rumour that the prefabs are to be replaced by permanent housing there are fierce protests. But the site houses only a small proportion of Harwell's workers; from the first, the Borough of Abingdon and the Urban District Council of Wantage did everything possible to help. Elsewhere there were difficulties, partly stemming from the attraction which employment at Harwell had for agricultural workers (just as Harwell's labour needs were to suffer later from the pull of the much more highly paid motor car industry in Oxford).

Expenditure

The total gross expenditure for 1977/78 was £67 million, of which £42 million was for AERE and £21 million for SRC. In addition Culham had 820 workers and an expenditure of £14 million. During 1981/82 the expenditure for AERE alone was £83 million, of which £40 million was on salaries and wages.

Salaries and wages apart, only some £4½ million was spent in 1977/78 in Oxfordshire; of this over one-third was on engineering work, one-third on transport — mainly the hire and maintenance of the transport fleet already referred to — and one-fifth on books and stationery. Local expenditure is low because Oxfordshire is, the car industry apart, not a major manufacturing area, and much of Harwell's demand for instrument work goes to lower wage areas further afield, e.g. to cottage industries in Wales and the Isle of Wight.

Transport

On a recent survey, there were 5910 workers on the site, of which AERE made up 4214 and SRC 1176. About one-third live in Authority houses and hostels or in houses provided for Authority staff by the local councils; of the two-thirds living in private houses, one-half are brought into work in Authority transport and one-half come in private cars. The Authority transport system has 41 different bus routes and 400 daily pick-up points.

Rates

One other element of 'current expenditure' deserves special mention: the rates paid to local government. During 1977/78, the site paid £1 million in rates. The parishes of Harwell and East Hendred each gets two-thirds of its rates from the site, and Chilton gets over four-fifths. So East Hendred has a rateable value of £2.6 per head of population, whereas the nearby Blewbury, where the houses have about the same value, has only 90p per head.

Harwell's direct effect on the local countryside has not been large. The site has its own sewage plant, its own fire service and its own police. Formerly there was a responsibility for answering local fire calls and for snow clearance on the local stretch of the A34, but this has now come to an end. Harwell failed to secure a modification to the road pattern in order to solve its problems at the beginning and end of the working day; when the A34 was eventually re-routed, Harwell's traffic was not held to justify a full roundabout near Chilton, so Rowstock remains a pressure point.

Social Impact

A detailed study of the social impact on Abingdon was carried out in 1959. Of the population of 13,000 almost one-quarter came from families where one or more parent was working on the site. The study showed the large percentage of Harwell's support enjoyed by the main clubs in Abingdon and the even greater extent to which Harwell people volunteered for committee work. There was tremendous interest in arts, music and opera, and the degree of church participation refutes the idea that scientists are not religious.

Effluent

Harwell's water-borne effluent goes into the Thames. The formula, prescribed when the Establishment was being planned, was that a man must be able to swallow 2.9 pints of crude water every day of his life at the

discharge point of the pipeline at Sutton Courtenay and not get more than 1% of the recommended permitted concentration of any radioisotope. The problem of how long a person would live who actually tried to drink 2.9 pints of Thames crude river water has never been tested! It is sometimes thought that the formula was devised in order to ensure that the Harwell site could not be selected, for the water at the discharge point had to be twice as pure as that on which the population of greater New York has survived for many years.

Such is the concern to protect the air and water of Oxfordshire that it may well be said that never in the history of science has so much effort been devoted to protecting so many from so little!

Education

Harwell's biggest social impact has probably been on schools — at an early stage a nursery and a primary school were established on the site, and existence of the Oxford High School for Girls, Abingdon School, St. Edmund's and others, was an important factor in the choice of Harwell. Close links with these schools have indeed developed. A special bus ran to Oxford High School for nearly 25 years, and a grant was made to Abingdon School by Harwell to expand the science laboratories there. Interesting research could indeed be done on the effects on the schools through inheritance of the IQ level of Harwell parents. 60% of AERE children passed the 11+ examination compared with the national average of 24%.

Impact on Oxford University

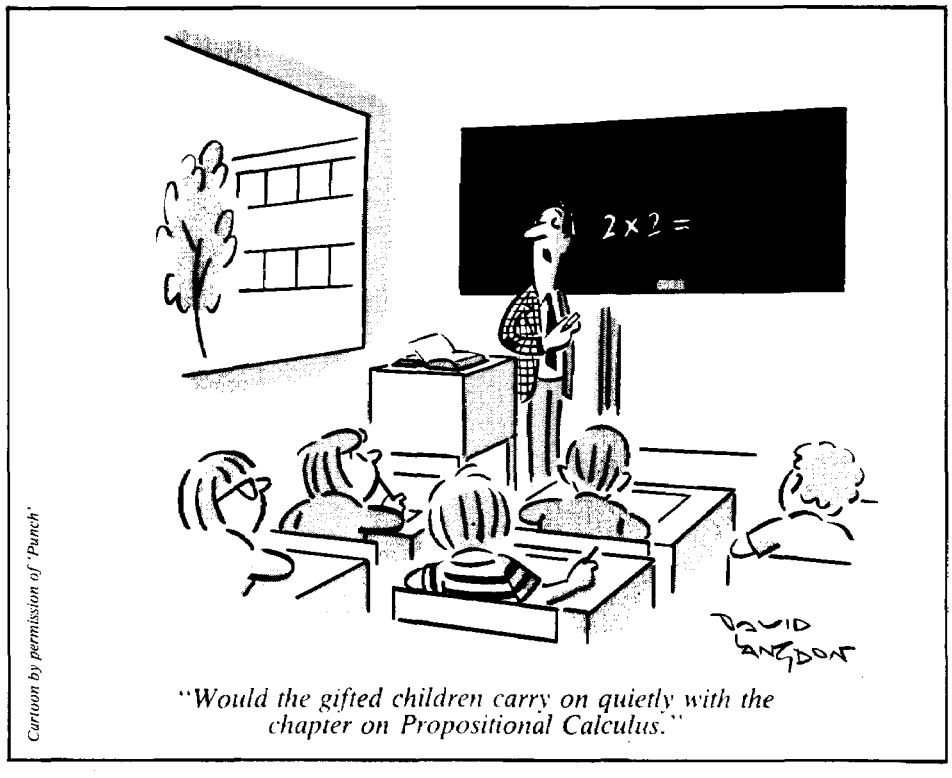
So far, nothing has been said of the impact of Harwell on the university of Oxford. The University was important in the choice of site; yet close relations did not develop easily. Of the first 130 contracts placed by Harwell with universities, only 16 were with Oxford compared with 26 with Cambridge and 32 with London. Indeed, in some years, none went to Oxford at all, and both sides contributed to this distant relationship. Cockcroft's determination that Harwell should have many of the features of a university tended to pre-empt for Harwell work which might have gone to a university. The wide scope for self-initiated research meant that the first generation of Harwell scientists did many of the interesting things themselves rather than leave them to their academic colleagues. Sir James Chadwick, the discoverer of the neutron, and our nuclear representative in the United States during the war, strongly criticised Cockcroft for placing so many important nuclear machines at Harwell rather than at the universities. However, there were genuine difficulties in that early time of specifying the research that should be delegated to universities, a difficulty to which the security problem added another dimension. On the side of Oxford University there was a distrust of big science and of big machines, and an emphasis on small research teams which probably became more acute as Harwell grew bigger; also a leading theme at the Clarendon Laboratory was low temperature research.

An improvement came with the establishment of the Chair of Nuclear Physics at Oxford in the early 60s. In 1978, Harwell spent £178,000 on contracts with Oxford University out of a total of £434,000 on such contracts; 60 students were attached to Harwell from Oxford out of a total of 270 attachments from all universities and polytechnics. Nevertheless, of the Oxford students, more than from other universities, most used Harwell facilities for training purposes rather than integrating themselves in joint programmes.

It was in the fusion and not in the fission field that the real collaboration with Oxford occurred. Here in the early years, the Clarendon Laboratory played a vital part in the development of the research. Thonemann and Von Engel carried out the first toroidal experiment at the Clarendon. After moving first to Harwell, when it became necessary on security grounds, Thonemann subsequently became one of the first Division Heads at Culham. One can trace the genealogy of thought straight through to the present JET European experiment at Culham. The JET plan for centres of excellence in fusion design may well designate the University of Oxford as such a centre before long.

Conclusion

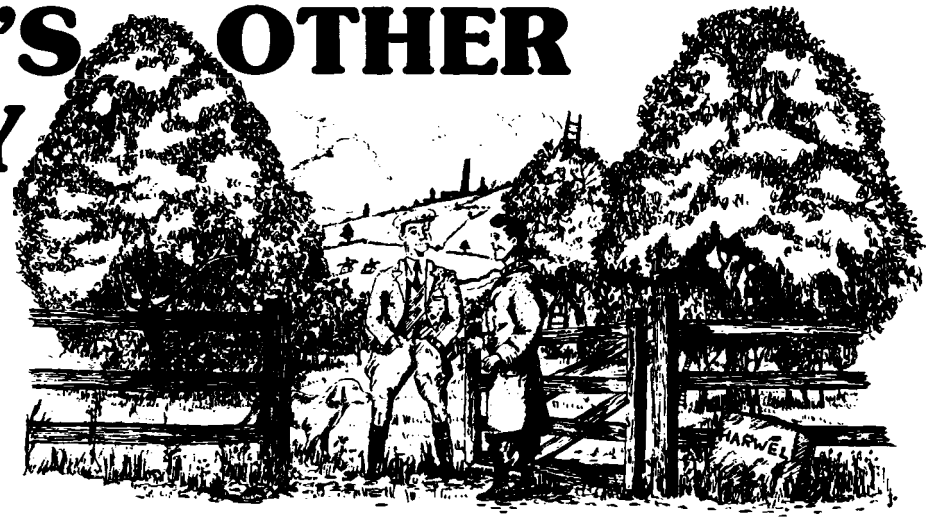
The social impact of introducing one of the larger concentrations of professional manpower in the world into Oxfordshire has been very marked. The main effect has been in Abingdon and Wantage towns and throughout the villages of the old North Berkshire which were transferred to Oxfordshire in 1972. In overall employment terms, it is reasonable to guess that after allowing for some secondary employment which it generates locally the site is responsible for some 10,000 jobs out of the Oxfordshire total of around 190,000.



Cartoon by permission of 'Punch'

"Would the gifted children carry on quietly with the chapter on Propositional Calculus."

HARWELL'S OTHER INDUSTRY



by Philip Mitchell, *Photographic Group*

A band of highly fertile soil, in geological terms 'an outcrop of Upper Greensand', extending from East Hendred to Harwell Village is characterised by the Harwell Fruit Growing Area. This 3½ square mile oasis of regimented fruit trees, lying in the shadow of Didcot power station to the east and surrounded by the more familiar cereal-growing fields of south Oxfordshire, contributes in no small way to the economy of the district. Just past Rowstock corner, going north, on both sides of the now comparatively deserted A34 road is the largest of the several fruit farms, the Grove Farms (Harwell) Ltd.

Developed from an original purchase of 17 acres by a Mr. J. W. Aldridge in 1936, its present director is Robert Bitmead, a pleasant affable, fresh-faced gentleman, to whom the words 'French Golden Delicious' or 'Cape Granny Smiths' seem to strike a somewhat discordant note. "We haven't the sunshine here", laments Mr. Bitmead, "to produce the Golden Delicious, but we can produce one of the finest English desert apples, the Cox's Orange Pippin, of which, oddly enough, many younger people have never heard."

The 120 acres of these, the par excellence of eating apples, are not the easiest of fruit to grow, being highly susceptible to inclement spring weather just when the fruit is setting. And weather is no doubt the greatest enemy of the fruit grower: "A really disastrous hail storm two years ago in July," recalls Mr. Bitmead, "stripped most of our trees bare in half an hour."

The very severe winter of 1962-63 also took its toll of young fruit trees, but weather isn't the only enemy; a close second on the list are the various bugs and bacteria which can spell doom to the orchards, and so an armoury of 50 different types of herbicides, sprays and washes are lined up in carefully controlled rotation to add £150 to £200 an acre to the running costs.

The substantial cherry crop for which Harwell has always been noted, has its own particular foes: the blackbirds and starlings which are kept on the move by paradoxically named 'bird minders'. These young men employed during the short 6-7 week cherry growing season in June, carry a rattle in one hand and a small bicycle horn in the other. These scarers are used alternately since the birds will quickly become accustomed to one type of noise.

"We did try a rather expensive system", added Mr. Bitmead, "involving a tape recorder and loud-speakers in the orchards, broadcasting loud distress calls of the male blackbird. After two weeks the birds were quite immune to it and the only effect was to annoy the local inhabitants!"

Birds, bugs and weather apart, it is therefore surprising to see so many perfect apples and pears picked and consigned to the extensive cold stores, the capacity of which is in excess of 2000 tons! The market would simply not be able to absorb such a large quantity of fruit at the peak of the picking season, so between October and the end of June each year the grower must seek the optimum stabilised price. The steady release of fruit from store keeps a staff of 15 fully occupied throughout this period, selecting firstly by size and then by quality according to fairly stringent EEC specifications; the fruit is packed into non-returnable containers, palletised and transported by road to wholesale fruit markets mainly in the north of England.

Although a total of 470 acres of Grove Farms are taken up by apples, pears, plums and cherries, a useful 50 acres of additional land are devoted to soft fruit and vegetables. Here Robert Bitmead's problem is not so much the growing as the picking. By its very nature the produce — raspberries, gooseberries, strawberries and blackcurrants — does not lend itself to any form of mechanisation, and it is not profitable to hire casual labour for the very short harvesting season.

So the accent is on 'P.Y.O.' (pick your own), and according to Grove Farms' booklet: 'Something that all the family can enjoy doing together.'

"We are still about 10 years behind the Americans in such P.Y.O. facilities and marketing", admits Bitmead, "but we will be catching up fast with a variety of attractions for our clients such as picnic areas, tractor rides for the children and possibly boating on our extensive irrigation lake."

Yes, Grove Farms have certainly kept up with the trends from that day sometime in 1936 when J. W. Aldridge tended his original 17 acres. And as for me, I'll always put my money on a Bramley or Cox's any day of the year.

When the above picture was planned as a cartoon* 'Harlequin 1954', *it was intended to have this caption: "Growing cherries again this year?" The figure on the right was to depict the visitor from the new London Office, unfamiliar with the ways of the countryside. The countryman was equally unfamiliar with the ways of nuclear energy, however, and it was felt there could be a double meaning: that cherries might not grow again that year! On the advice of the Chief Security Officer, Wing Commander Arnold, a founder member of* 'Harlequin', *the cartoon was not published.

As the article reports, cherries, and other fruit, grow well at Harwell most years!

SOME GROUP THERAPY

Devised by Reg Wilkinson MRC

Old photographs and postcards are of great interest to local historians. Of the many subjects they encompass the numerous groups of people that have been recorded are probably the most fascinating. Although most of the people in the groups tend to look very serious, it is usually easy to tell what they are saying, or thinking. Perhaps this selection of reproductions will give readers some idea of what I mean.

▶ The bunch of cherry pickers who paraded for the photographer at Middle Farm, Harwell, around the turn of the century bears little resemblance to the soldiers known as the Cherry Pickers who took part in the Crimean War. However, their armament no doubt played a major part in the battle to prevent birds getting at the cherries. The gentleman in charge wears a tie and stands slightly aloof to the left.

◀ This photograph of the entire labour force at the Challow works of Nalder & Nalder was taken in about 1905. The gentleman in charge wears a suit and a bowler hat and again stands slightly aloof to the left. In general cloth-caps are the most popular choice of headgear, but there are one or two straw boaters and a few bowlers. Perhaps the latter were worn by men of ambition. It is difficult to decide what the photographer had in mind when he photographed these men, because many of those in the group cannot be seen at all clearly.

▶ Wantage Post Office has also changed its status since this photograph was taken and the building is now a shop. If the clock is right, the group was photographed either very early in the morning or after closing time. Whichever was the case, fourth from the left, back row, looks as though he has had enough.

The Painting by Hans Holbein

Atomic Science to Archaeology

In the first Elizabethan age, the ideal man was a person of all-round knowledge rather than someone whose skill was limited to science or to the arts. One of the results of increased specialisation in our own day is that few people have more than a nodding acquaintance with many fields of knowledge. This is what makes Dr John Fletcher so unusual.

His interests range from science and archaeology to history and art. He went to Shrewsbury School where he specialised in the sciences — in spite of this he won the School's history prize. At Oxford he was indoctrinated by his tutor, Sir Harold Hartley, with the pre-war discipline then conventional for scientific research, and after graduating in Chemistry stayed on for a year to teach and do research under C. N. Hinshelwood, a future Nobel Prizewinner.

Research, in one form or another, has occupied most of his subsequent career. It was while taking his PhD in California that its direction was influenced by three events.

He arrived at Berkeley in 1934 just after artificial radioactivity had been discovered. That event meant that radioactive iodine could be produced there and so he very quickly used it as a tracer to finish a small piece of research started at Oxford; thereby he became familiar with radioactivity.

The second event, also linked later with atomic energy at HARWELL, was his choice of subject for academic research at Berkeley; the thermal decomposition of diethyl ether — the 'ether' of commerce. It happens that uranyl nitrate is soluble in ether, and so in 1946 this was a possible solvent for extracting and purifying uranium in the new industry of atomic energy.

The third event was his meeting and close friendship at Berkeley with Willard F. Libby, then also a post-graduate in the Chemistry Department. For a time they shared a flat and in the summer of 1935 toured together in Arizona, New Mexico, Colorado and Utah.

That trip revealed to both of them new aspects of archaeology, including the dating by tree-rings (dendrochronology) of cliff dwellings built by the American Indians about the time the Normans were building in England. After the war, Professor Libby, influenced perhaps by that trip, greatly helped archaeology through his pioneer work on Carbon 14 dating for which he was awarded a Nobel Prize.

At the Memorial Occasion in 1980 held at Los Angeles, to celebrate the life and work of Bill Libby, John Fletcher was able to recount to the distinguished company some of the incidents in their travels across the Painted Desert of Arizona. Later they met on various occasions, one being the first (1955) Conference at Geneva on Peaceful Uses of Atomic Energy at which both presented papers.

Back in England in 1936 Dr Fletcher spent the next four years teaching at Eton College. The war took him first to making rockets, then into the Army as a Staff Officer specialising in Chemical Warfare and in producing smoke-screens.

After a brief interlude in industry, Dr Spence, Head of Chemistry Division, mindful of his research at Berkeley on ether and of his industrial experience, brought him to the HARWELL Laboratory in 1948 to be in charge of research on chemical processes in aid of the plant to be built at Windscale. The first job of his group was to perfect a process to extract and purify plutonium from spent fuel using solvent extraction.

After a cycle with the solvent butex, there were unacceptable quantities of radioactive ruthenium with the plutonium. John Fletcher decided to recommend the novel solvent TBP (tributyl phosphate) in a further cycle to separate the plutonium from the ruthenium. That led to the first use of TBP in any atomic energy plant and paved the way for its present widespread use. As a result of the problems created in atomic energy plants by radioactive ruthenium, Dr Fletcher became, with the participation of the loyal and versatile group that worked with him, a world expert in ruthenium chemistry. He remembers in particular the great benefit from discussions with Professor P. L. Robinson, who had joined the Chemistry Division as a consultant.

During his time with the UKAEA at HARWELL, John Fletcher admits to being 'a bit of a rebel'. Thus he began diversification a year before it was officially approved by starting on the Sol-Gel project. In this novel process, droplets of inorganic material are converted into near-perfect spheres of well-defined density and porosity; so it has had numerous applications in nuclear and non-nuclear industries.

He retired at the end of 1967 from the HARWELL Laboratory, but his continued interest and support for the UKAEA has been shown by the independent evidence he volunteered at the Windscale Enquiry as one who had worked with plutonium for 25 years without adverse effects.

His decision to retire from the UKAEA and 'change gear' by trying to set up dendrochronology in Britain was a calculated gamble. First he spent three years in the Department of Forestry at Oxford learning about trees. His object — to date early timber buildings which abound in Harwell and adjacent villages — had been inspired when he and his family moved into one of them, Wellshead Farm, formerly the rectory house, close to Harwell Church.

Timber from such buildings had been dated by their

▲ *Painting on panels from same tree*

The new window at Harwell Church ▶

ring-widths in Germany, so why not in England? He accepts now that English timber is much more difficult to date than German timber, but he was fortunate in two ways. Computers had become available, and a German colleague in 1970 told him that the oak panels used as support for paintings would provide an easy way to start dendrochronology in England. It has indeed, and it has also provided him with scope for his interest in history because the date of a painting often reveals its purpose.

His name is now familiar in art historical circles in which paintings on panels present problems. He has worked on 250 paintings, many in the famous galleries of Europe and America. The exhibition 'Dendrochronology' he organised in 1977 in conjunction with the National Portrait Gallery in London was visited by nearly 30,000 people.

It included a fascinating discovery. Four portraits (photograph above) each about the same size but in various collections, showed Tudor princes of which only two had been identified. Henry VII on the left; Henry VIII, aged nearly thirty and with his newly grown beard, on the right. But who is the prince in the two centre portraits? Perhaps, some thought, Arthur: Prince of Wales, the older brother of Henry VIII, who died in 1502.

The tree-ring patterns showed that all came from the same tree, felled about 1513 and probably used soon after. Henry VII was dead by then. A date around 1515 would fit a demand at that time for ambassadors to have paintings of their handsome monarch Henry VIII. Thus the two in the centre are doubtless examples of copies of a portrait made at the time of his coronation and marriage a few years earlier. For the first time we can identify the countenance of the handsome, athletic and artistic Henry VIII at what we regard as an 'undergraduate age'. But what about the later portrait of him, bearded, on the right? X-rays showed the face was *originally* the same as the central pair, but later overpainted to show his more mature countenance and his beard. This discovery so appealed to the BBC that they wished to borrow the portraits for a TV programme in which John Fletcher was interviewed by Jan Leeming on 'Pebble Mill'. Use of the portraits themselves was unacceptable, so a large colour photo was taken at the Exhibition and used on TV. The photograph above is a print of it.

The discovery of a new painting by such a famous painter as Hans Holbein is a rare event. To participate in such a discovery has proved to be John Fletcher's most recent and rewarding piece of research in his application of science to art history. Treated almost as old lumber in a Gloucestershire rectory house after the war, it changed hands in various West Country sales until a Coventry dealer noticed its merit. It went up for sale at Christies, where the experts, with two exceptions, could decide neither the artist, the date nor where it was painted. One, suspecting Holbein, asked for tree-ring dating of the panel. Helped by knowledge acquired from other paintings by Holbein, John Fletcher found it was almost certainly painted in Antwerp; its date fitted Holbein's brief visit there in 1526, while stylistically it is consistent with works from his hand at precisely that stage of his career.

The Museum who commissioned this research was the J. Paul Getty Museum in California. They have now purchased the painting and have it on exhibition. The painting is an emblem, a translation of its motto being 'Thus Desire Leads me Forward'. The white horse, a sign for male virility, makes it clear that amorous desire is intended.

While living in Harwell Village, John Fletcher had become interested in local history. One day in 1964 he received a letter from Miss Melissa Harwell of Arkansas City, Kansas, USA — who felt that she and others with this surname in the United States might be descendants of families who had lived in Harwell, England. Spurred on by this, they became involved in tracing the Harwell family from its origins to the present day.

In a fascinating book called 'The Harwell Trail', John Fletcher and Jan Whittaker of Dallas, Texas, whose grandfather was Miller W. Harwell, have traced the generations between John atte Halle who lived in the village in 1300 and the Harwell families who now live in America. The trail is a long and winding one. The surname started in England when the sons of freeholders left the village to become administrators. Thus, strangely, no one with the surname actually lived in Harwell.

One son, John de Harewell as it was then spelt, served the Black Prince for twenty years and was made Bishop of Bath and Wells. The trail was carried on by his brother, Roger, at Wootton Wawen, in Warwickshire, and later at Besford, Worcestershire, by Roger's grandson. There in late Elizabethan times Sir Edmund Harwell was ruined as a result of speculating in new projects and his sons left landless. In due course, one of them, Thomas, at the age of thirty risked the rigours of the New World and in 1635 sailed as a colonist to Virginia.

The book traces Thomas's descendants from those early days in Virginia to the thousands with the surname Harwell who are widespread in the Southern States of America. Yet in England the surname is almost extinct.

Should you wish to read the whole story, the booklet 'The Harwell Trail' written and published by John Fletcher and Jan Whittaker, with free-hand drawings of Seton McConnel, maps and other illustrations by Judith Takacs, is available from local bookshops or from John Fletcher at 20 Tullis Close, Sutton Courtenay, Abingdon OX14 4BD, Price £2.50.

As some readers will be aware, a stained glass shield (pictured opposite) was unveiled in one of the North Aisle windows of St Matthew's Church, Harwell, on 20 September 1981. The shield is that of Bishop John de Harwell. The inscription records that the window was given by the Harwell families of America.

**Next year, several of the American Harwells will be visiting the country to commemorate the 800th anniversary of the foundation of Wells Cathedral. It is hoped that we may see them in the village and be able to forge further links.—Ed.*


The Arms of
JOHN de HAREWELL
c.1320-1386
Native of Harwell. Clerk to the
Black Prince. Govenor of Aquitaine
Bishop of Bath & Wells and a Royal
Councillor during Richard II's
minority.
Being of the same lineage his arms
were quartered by the Harewells of
Wotton Wawen, Besford & Felsham.
Two sons of Sir Edmund Harewell of
Besford, Worcestershire emigrated to
Virginia in 1636. Their descendants
in America gave this window in 1981.

When the Town could not boast of even a one-horse box ....

... 100 YEARS AGO IT CAME TO OXFORD

by Dennis Tyler

The writer's grandfather, Arthur Augustus Tyler, was the last Manager of the City of Oxford and District Tramway Co. Ltd., before becoming General Manager and then a Director of the City of Oxford Motor Services Ltd.

Family archives helped with this article and with the Exhibition mounted by Oxford's Westgate Library to mark the Centenary.

The horse tram was to come to an Oxford that now seems part of another world: to an Oxford that was much quieter and more sedate, in which the Oxonian could stand at the junction of the now busy Woodstock and Banbury roads and, for minutes on end in vacation time, not see so much as a cat pass by. It was an Oxford in which the horse already played an important part: from the butcher-boy's trap to the carriage and pair, to the hansom cab that in those quiet years before no-waiting restrictions, stood dreamily in line outside Queen's College in the High.

While Oxford was enjoying its sleep of centuries, George Shillibeer, an English coach builder in Paris, brought the first horse-omnibus to Britain, to run in London.

It was the Great Exhibition of 1851 which gave the impetus to public transport in London, when some 25,000 people went to the opening alone. After this there was a struggle for survival until, ten years later, our story begins when inventor George Train, after getting permission to lay a line from Marble Arch, brought the first horse tram to London. Oxford would withstand the march of progress, but the rumble of the tram was getting nearer.

In the second half of the last century Oxford was a much smaller city, more compact, with no high commercial buildings, few suburbs and with the poorer classes cluttered together in alleys and courts that ran off the main streets. Oxford was then still unspoilt, primarily a University city as Cambridge is today. Viewed from the surrounding hills, it was seen without the red brick incrustations that are now inlaid in the north, south, east and west.

To the north, the present suburbia was so slight that the Radcliffe Observatory viewed from Port Meadow appeared isolated in the country. The few houses just beyond the Horse and Jockey marked the end of Oxford on the Woodstock Road. A short row of houses on each side past St. Giles' Church seemed to mark the end of the City on the Banbury Road. Further north where professors and college tutors were beginning to exploit the recent permissiveness over the rule of celibacy, a few houses lay scattered off both roads. The new large houses were cut off from the city by the Parks, and even in the eighties Summertown was regarded as a distant village.

To the south of Oxford, there was the old White House past the Folly Bridge Toll Gate. Along the Abingdon Road there was little more beyond Lake Street, at the end of which stood until 1872 the G.W.R. Goods Station, originally the passenger terminus for the short line from Didcot.

To the east was Magdalen Bridge which, even with the sparse traffic of those days, would be too narrow to accommodate a tram-line. On the Cowley Road, off which the horse tram depot was to be built, there were a few houses scattered along the grass meadows and hedgerows. Past the Cape of Good Hope, which was later to be used for storing spare equipment for the horse-tram, there was little in the middle of the last century before Iffley Village was reached to encourage even the most infrequent public transport, but Cowley Village was beginning to grow.

To the west, apart from the odd house, there were only fields and hedgerows stretching to Botley, but just a little way on this western route from the City were the stations with many passengers requiring transport cheaper than the hansom cab. There was the London and North Western Station, built in 1851, and the G.W.R. Station, built in the following year, to link up with Banbury when the Company absorbed the West Midland line and extended north.

It is desirable to first look at Oxford before the coming of the horse-tram because it otherwise might be thought that the same purpose, or lack of purpose, which had delayed the arrival of trains, was responsible for the delay of over a quarter of a century before Oxford received the horse-trams which were contributing to the life of London.

Any would-be horse-tram operator would have to negotiate with the two-headed officialdom of Corporation and University. Also he would remember the difficulties met by the Railway Company in extending its line to Oxford. Repeated proposals for a Didcot-Oxford line had been made — in 1837 and 1840 — and all had been defeated in the House of Lords. During those years, the nearest station had remained ten miles away at Steventon, from where eight coaches ran each day at a charge of 3/- for the 1½ hour journey.

Our would-be operator would remember the conditions imposed in the bill that was finally passed and which, for years, allowed the train to come no nearer than the outskirts of Oxford, at Grandpont. Officers of the University had power to inspect all trains and see that no member of the University below M.A. or B.L.C. was travelling, an example of proctorial control that would be regarded as outrageous in these more liberal days.

The would-be tram operator would aim at custom from the town more than from the undergraduates, and he would remember the difficulties met from this quarter by the Railway Company. When the site of the bridge for the old Oxford-Abingdon road had been decided upon, Alderman John Towle, who had a paper mill, sought more than reasonable compensation from the Company. He had a small hut erected with a fire-place and brown paper roof, and with

this 'house' claimed compensation for having the value of his property reduced.

Oxford continued for longer than most towns to be dependent on the horse because it was late in being connected by rail. In its early days the railway journey from Oxford to Paddington took seven hours. Even when it was improved upon, many preferred the more comfortable journey by coach. To Cheltenham, which was even later in getting a railway connection, horse coaches continued from Oxford into the last few years of the century. The year 1866, however, which saw the pulling down of the main part of the old coaching house, the Angel Inn, where the Examination Schools now stand, marked the end of the coaching era for Oxford.

For local transport, the horse had not yet reached its heyday. There were three or four pumps along the Botley Road, then known as Seven Bridges Road, to keep down the dust. In the High Street the fire plugs were opened at Carfax soon after seven o'clock in the morning to water the kidney pebbles. As the water swished along the gutter, two men dammed it at intervals with boards to which sacking was attached. Water was then thrown towards the strips of granite setts in the middle. In this primitive way the whole of the High would be watered from Carfax to Magdalen.

In those days, the horse — from the pony-and-trap to the four-in-hand — served the function of the motor car. A humbler beast was the donkey which, fixed to the shafts of a large sort of Bath Chair, would be led by a man to take the wives of Oxford dons in pairs on afternoon rides. Two-wheeled pony carts would be used by those who required speed with comfort to explore the Oxford countryside.

While Oxford held back from the tram era, some cities went forward, and legislation was passed that was to prepare the way for Oxford's horse-tram. In the Tramway Act of 1870, local authorities were given the power to veto proposals and to buy up on unfair terms whole or part of a tramway system every few years.

One clause passed at that time, however, was to be particularly suited for Oxford. The Act required grooved rails that were flush with the road surface with no projection as for railways. When, later, Oxford was to become the 'City of the Bicycle' this was to make less difficult the dash from college to college for lectures within the University curriculum.

For some people the horse-tram when it came would be too slow. For many who were being compelled to live in the new suburbs because the university buildings and gardens occupied so much of central Oxford, there must have been the hope, particularly during hot or severe weather, that soon Oxford would see the new form of public transport that rumbled round London and other cities. Where there was the demand there would eventually come the supply ..... and come it did one hundred years ago this month.

How it came, and what followed, is described in the well-illustrated 'Book of Oxford Buses and Trams', published recently by the Oxford Bus Museum Trust at £4.50 post free from 118 Rutten Lane, Yarnton, Oxon.

Rutherford Appleton Laboratory

RAL - New Look

From 1 October the Laboratories became known as the Rutherford Appleton Laboratory, signifying the completion of their merger.

Dr Geoffrey Manning

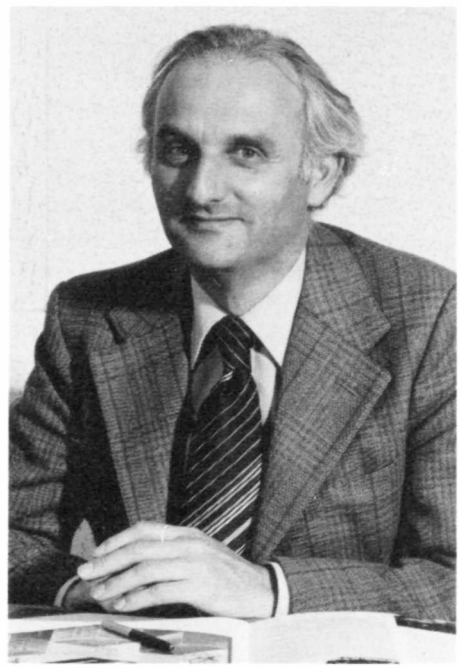
became Director of the Laboratory, with Professor John Houghton as Deputy Director.
Professor Houghton, who is on a five-year secondment, maintains links with the work of his University Department at Oxford. Initially, Dr Manning will undertake responsibility for technical services, e.g. the Council's computer service and also the duties of Associate Director (Science). Professor Houghton (who will continue with the title Director, Appleton) will be responsible for Astronomy, Space and Radio Board work.

Hot on the heels of the news that its Director General, Dr G. H. Stafford, FRS, was relinquishing his post to devote more time to St. Cross College, Oxford (of which he is Master), came the news of the change of name and management structure of the Laboratories.

The portrait of Sir Edward Appleton FRS, a photographic copy of the painting by Sir William Hutchinson, hangs in the building R1 Coffee Lounge as a reminder of an important component of the Laboratory's history.

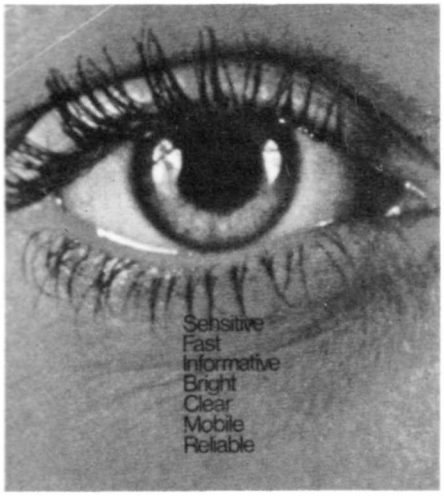
Professor Houghton Reflects . . .

Now that the two Laboratories have merged it is interesting to recall the association between the two men, Sir Edward Appleton and Lord Rutherford. As a young scientist, Appleton returned to the Cavendish after the end of the first world war to work under Rutherford where he carried out much of the work towards the major discoveries for which he later received the Nobel Prize. Later, Appleton's period as Jacksonian Professor overlapped with Rutherford's last two years as Cavendish Professor.
Appleton also had Oxford connections. His critical experiment in 1924 which unequivocably demonstrated the existence of the ionosphere was in fact made from the University Electrical Laboratory in Oxford, for the very good reason that Oxford was about the right distance from Bournemouth. When it was suggested to Appleton that it was a pity that he could not make the measurements at Cambridge he replied, "Most Cambridge men have their Oxford moments!"
Appleton concentrated on investigations of the ionosphere, much of the work being in co-operation with scientists at Ditton Park, which gained its autonomy largely due to his efforts. To recognise Appleton's unique contribution to radio research, the Station then under the Science Research Council was re-named the Appleton Laboratory in 1973.



. . . and looks ahead

In what ways is it intended the Appleton programme should devolve in the merged Laboratories? Two main areas of the current Appleton programme are Radio and Communications Research and Space Research. In the communications field we are living at a time of enormous growth due to developments in radio electronic and computer technology. During the 1980s the lives of all of us will be affected by changes brought about through these new possibilities. Merging Appleton's expertise in radio techniques and propagation with Rutherford's expertise in micro-electronic and computer technology is already enabling the Laboratories together with the Universities to become involved in the whole field of communications research. In this way we can try to ensure that the UK plays its part (and reaps its fair share of the rewards) in shaping communications of the future.
In Space Research the intention is to build a Space Support Centre at Chilton combining Appleton's background in the management of space projects, in satellite operation and in space data acquisition, with Rutherford's background in a range of relevant technology — for instance vacuum techniques and materials research. Through this Centre we shall be able to plan for and support a broad-based space science programme in both astrophysics and earth-orientated research, and also be more able to participate in the work of the European Space Agency.
Because the Appleton Laboratory is considerably smaller than Rutherford Laboratory, many Appleton staff have been concerned lest they are swallowed up by the much larger Rutherford. I am confident that this will not be the case, but rather that the particular background and ethos brought over by the Appleton Laboratory, with its long tradition going back over fifty years, will not be lost but will contribute in effective ways to the future development of the combined Laboratories.



In the Year of the Disabled

HELPING OTHERS TO "SEE"

by Gordon Dean, *Education & Training Branch*

RELIABLE — until something goes wrong. What can go wrong? Cataracts head the list of eye disorders causing blindness, followed by glaucoma and disorders of the retina. If the sight in one eye is lost, it is possible to overcome the handicap in a relatively short time. But apart from a miracle, how can you manage without any sight?

When the Royal National Institute for the Blind (RNIB) was established more than a hundred years ago, its prime objective was to produce Braille, which today still plays a vital role in education, employment, leisure and in communication generally. It continues to put heavy demands upon the Institute's resources; in 1979 over £1 million was spent on providing Braille material.

More than a half a million copies of Braille periodicals are produced a year. The most popular continues to be 'Radio Times', which is free, and over 5,000 transcribed copies are sent out every week. RNIB's own monthly publication 'New Beacon' has 1,300 subscribers to the Braille edition. Amongst the 180 publications put into Braille are crossword puzzles and knitting patterns, the song book of the Salvation Army, the Penguin 'Complete Guide to Investment', Hoyle's 'Modern Encyclopaedia of Card Games', the 'Fontana Dictionary of Modern Thought' and, in an election year, the manifestos of the political parties. Government leaflets on social security benefit rates and family benefits and pensions are also transcribed, and maps of Edinburgh and Africa published. Members of RNIB's Publications Selection Sub-Committee, who are themselves mostly blind, choose the publications.

Modern technology is helping in the continual search for means of providing more Braille material economically. The world's first multi-font print recognition machine to become commercially available was installed in 1979. This machine electronically reads print of many different types and qualities direct from books, and converts the information into a digital form which can be translated immediately into Braille by the Institute's specially programmed computer; this avoids the time-absorbing necessity of putting the entire publication into the computer system by hand.

RNIB is now responsible for a personal short document service. It puts into Braille, free of charge, lists of much used telephone numbers, gardening articles from magazines, minutes of local committees, recipes and many, many more items. Each user of the service can have up to 10 copies of an item but, to spread its usefulness amongst as many people as possible, there is a limit of 3,000 words a month.

A major breakthrough in 'reading' for blind people has been achieved. A machine developed in the USA 'reads' books electronically and speaks what it scans. RNIB at St. Dunstan's bought in 1979 one of the first production models of the Kurzwell Reading Machine, which costs about £12,000. Over 200 people, from a nine-year-old to an eighty-two-year-old, have participated in judging its usefulness. They included housewives, lawyers, telephonists and researchers, and one enthusiast said: "It is a most exciting experience, when you haven't been able to read print for years, to be able to read a book for yourself without troubling someone else to read to you."

The British Talking Book Service for the Blind started in 1935 when it pioneered long-playing records which came into general use after the Second World War. The Talking Book Library now provides a portable unit which replays a magnetic tape contained in a special cassette. Up to 12 hours of reading can be obtained from one cassette.

Membership of the Library is open to any visually handicapped person who can provide a certificate from a consultant ophthalmic surgeon to the effect that the applicant has defective reading vision (generally N12 or worse with spectacles). Persons registered blind with their local authority do not have to provide this certificate.

The following reproduction from a sight test chart shows this level.

N12 24%

When the watersplash is swoll temptation to linger on the fo horses splash through, and wh

There are about 120,000 blind persons in the UK, and the Talking Book Library has about 55,000 members. The Library records a full range of books, including novels, biographies, histories, mystery stories, classics and the latest best sellers. There are over 3,500 titles available, and the total number of cassettes in the service is around 300,000. Book publishers allow RNIB to record copyright material only on the special cassettes, which cannot be used on ordinary commercial playback machines.

Despite the computer revolution, the Library has only recently computerised its list of members. This

facility allows up to 9,000 cassettes a day to be processed; of these, around 8,000 are despatched to members, and the remaining 1,000 are returned to the Library shelves.

Annual membership subscription, which is now £12, includes the free loan of a talking book machine which at present costs £89.29. Applications for membership are made initially to the Social Services Departments of Local Authorities, who will often pay the subscription charge. However, an 'Oxford Mail' report on 1 June 1981 said that "Oxfordshire County Council's Social Services Department is demanding charges of up to £10 a year for the use of its talking book service". This appears to be a terrible blow to pensioners — some of whom are housebound — when sighted people can borrow library books free. The RNIB is responsible for 60% of the library service's running cost, which for the 1980 period was £735,775.

The playback machines are serviced in Library members' own homes by a team of some 3,000 volunteers around the country, who call on members locally in their free time, often after work. Volunteers do not have to be electronics experts, but they are shown how to make the sort of simple repair that is usually needed, for instance, replacing a component. For more elaborate servicing the machine is returned to RNIB's own workshops. There are many areas in the country where volunteers are thin on the ground, and offers of help are greatly appreciated. More information is available from the British Talking Book Service for the Blind, Mount Pleasant, Wembley, Middlesex, HA0 1RR.

Readers of this article who would like to help in some way can contact Gordon Dean on Oxford 779855 or write to him c/o 'Harlequin'. Gordon Dean acts as Co-ordinator of volunteers for Oxford and District, but will deal with queries from any part of the UK. Help can be given by just being able to instal and demonstrate the equipment, and occasionally calling to clean the playback head of the tape machine. A special test cassette is issued to volunteers to assist in the demonstration of machines.

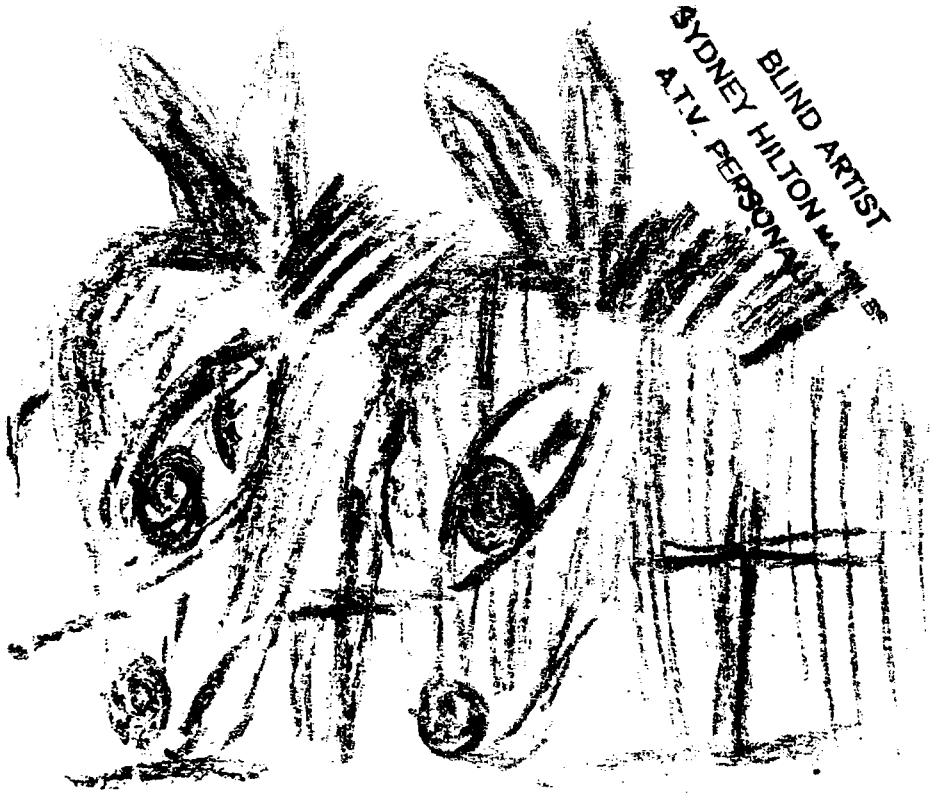
Whether or not you are able to help as a volunteer, did you know that by donating your eyes for therapeutic or research purposes you could help restore sight to someone requiring a cornea? Just leave a note to this effect with your will and let your relatives and doctor know your wishes.

The RNIB receives contributions from national and local government towards some of its services, but depends on funds from donations, covenants and legacies — and also on those who can give their time — to continue and expand the help required for the 120,000 blind people in the UK.

CAN YOU?

Move your head
Use your mind to think
Mirror the beauty of creator
Hear the song of birds
The cell of isolation
See the beauty of nature
From the pupil of your eye?
Can you speak, to call of joy or pain
With a voice that can be heard,
Use your hands to create
And hold in friendship
One's feet to walk towards?
Then, my friend, don't wish you
had time,
You never know the future.

S.C.H.



Totally blinded as an Army Captain in the last war, Oxford-born Sydney Hilton, now of Farmers Close, Witney, speaks of being somewhat bitter at first. Then he decided to make the best of things: by getting about and using a creative talent which he developed for the benefit of others.

In sketches, such as the above, he uses the fingers of his left hand to mark the portion of lines made by the right. For us to do the same is to meet with a sense of frustration, which in the case of the blind person cannot be relieved by opening one's eyes and seeing a Picasso-like caricature. Try it!

Sydney Hilton, however, persevered, has twice appeared on television and has received letters from HM the Queen and the US Ambassador. Without a talent in either direction before his handicap, he continues to write and to sketch on behalf of those he feels in greater need.

Some people suggest a 'Law of Compensation' which enables those with severe disabilities to rise above them by developing other faculties to a high degree. The Chairman of AERE Toc H comments: "It is true some people are able to demonstrate great fortitude, but others face an impossible task trying to pull themselves up by their own shoe laces. What nullifies any such 'law' is our own variable gesture of help given when needed".

DONKEY WORK

The DONKEY is a self-contained transport module and has been designed especially to meet the needs of the small-scale Middle Eastern agricultural business.

Silent in operation, except when the built-in audible alarm is triggered by some external hazard, it can be fuelled by a wide variety of locally available materials.

Far from polluting the environment its exhaust materials provide trail markers.

When this purpose has been fulfilled these markers can be collected up and used as a starter mechanism in the production of further supplies of fuel.

The module is largely self-steering so that the owner can safely concentrate on business planning or even take a well-deserved nap while being carried from place to place.

Two types of module are available. Both are entirely suitable for transport but in addition, by means of an ingenious process too technical to be described here, a matched pair can produce replacement modules which keep the owner's fleet up to strength without the need for further investment.

The maintenance schedule is simple. Apart from periodic refuelling, it consists merely of an occasional rubbing down of the external fabric which, incidentally, is almost completely corrosion proof. Some care must be taken during this process since unfortunately the maker has not provided any facility for switching off the unit during idle periods.

The above is how one might expect to see the humble donkey described in technical language à la 'Computer Weekly'.

This long-suffering animal is still used as a beast of burden in many under-developed countries.

In this country there are sanctuaries to deal with sick and abandoned donkeys from around the British Isles. The best known is at Salcombe Regis, near Sidmouth in Devon, where, at a cost of some £7 per head per week, over 900 donkeys graze on 600 acres, controlled from four separate farms.

Mrs. Elizabeth Svendsen, who founded this charity known as 'The Donkey Sanctuary' eight years ago, admits she has many critics who feel the money could be better spent.

With five new donkeys arriving every week, it is good to see a Donkey Adoption Scheme in operation. After one of the Sanctuary's inspectors has approved the proposed paddock and shelter, a selected donkey is delivered. To help checks on its health, unannounced visits are made every few months, with vet bills paid when the foster home cannot afford them.

Sam Pyne of Personnel Department, wanting company for his horse, applied and had Marco, a 10 year old gelding donkey, sent to his Leckhampstead home.

Marco had earlier shared with a Shetland pony, and is described as 'affectionate, likes company and very intelligent'. He brays only when he has to be separated from his four-legged companion!

Those who see the donkey as a pack animal required to earn its keep might be helped by an Applications Manual for Donkey (produced by Burros): *If your donkey is in non-operative mode, with minimal forward progression or total lack of mobility, do not use physical force to induce movement. Return equipment to standard typical animal byre living environment (STABLE) and increase ambient temperature so that condition WARM (wet and really mucky) is fulfilled. Heap PRAISE (pleasant railleries and incidental sycophantic excesses) on equipment, which should then begin to refunction smoothly.*

The Steam Age

by Ron Rigley, Culham Laboratory

In 1961 four schoolboys peering over a railway footbridge at Southall saw some redundant locomotives rusting away in a siding. The sorry sight of these once-mighty machines being left to die like stranded metallic whales on a desolate seashore filled them with horror. Others were equally moved to see the plight of the engines and realised that a loco-less future was looming before them. It was no coincidence that very soon after this 'The 14XX Preservation Society' was started. Their very first locomotive rescued from the scrapheap was an 0-4-2T engine purchased by enthusiastic members and then painstakingly restored to its former glory. From these small beginnings the Great Western Society came into being. Today, two of those same schoolboys are Society Directors and that first 0-4-2T engine resides in the Didcot Railway Centre, home of the GWS.

The Centre stands in 15 acres of land bounded by Brunel's main line from London to Bristol and also by the lines going north to Oxford and Birmingham. Twenty-three famous and not so famous locomotives are on display together with an impressive collection of rolling stock, passenger coaches and goods wagons. Many of the locomotives have been restored to their original liveries and work is in progress on the remainder.

The principal building on the site is the original engine shed complete with 50 ton hoist, but this is certainly no mere museum piece as the hoist is still used in the renovation of locomotives by means of time-honoured methods and machinery. Close by can be seen — again, still in use — the coaling stage surmounted by a 75,000 gallon water tank. Just a short distance away is the working locomotive turntable and a carriage shed which is used to house and restore the collection of GWR carriages, the oldest dating from the turn of the century. A typical

A Great Western flat truck with original milk churns.

country Great Western Railway station has been re-created and includes a ticket office, waiting shelter and a signal box with signals, all saved from closed down stations.

The Great Western Railway was originally built to Brunel's broad gauge of seven feet between rails and a demonstration section of broad gauge track has been laid into the wooden transfer shed, once used for trans-shipping goods from broad to standard gauge wagons, to recreate the broad gauge scene. The Didcot Railway Centre is a fine example of how it is possible to bring back some of the colour and atmosphere of the past.

Whilst the majority of the collection is of GWR origin, other locomotives include Southern Railway's 'Winston Churchill', on loan from the National Railway Museum, and the 'Evening Star', the last steam locomotive to be built for British Railways. Also on view is the local Wantage Tramway No. 5 which was built in 1857.

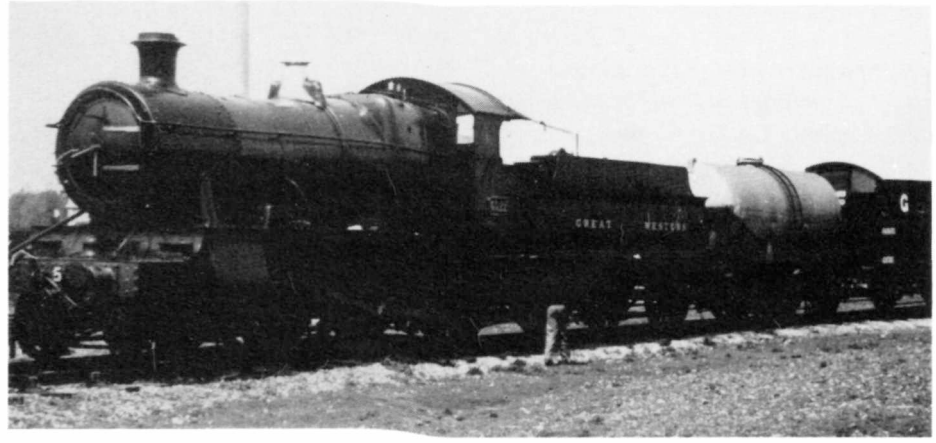
On steaming days, a GWR steam train with the locomotive painted Brunswick green and resplendent with polished brass and copper fittings hauls chocolate and cream carriages on rides for the visitors. On such days the public are able to watch a demonstration of exchanging mailbags at speed between the travelling Post Office and the special track-side apparatus.

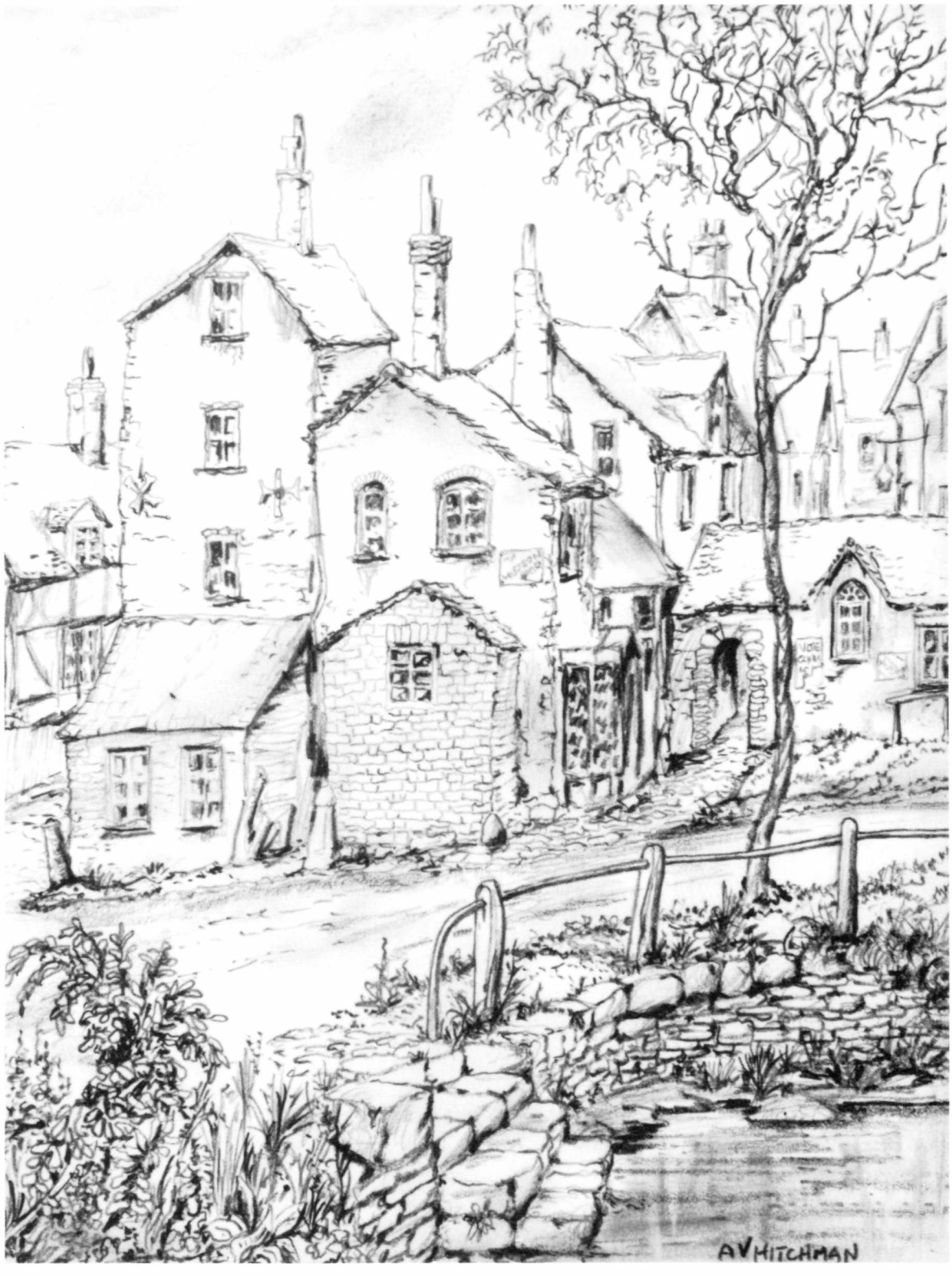
The Centre has many 'Open Days' most of them 'In Steam', plus a number of special days for parties of schoolchildren. Over 55,000 visitors attended last year which gives some idea of the popularity of the facility.

Much of the original depot had been left as unchanged as possible to convey the essential atmosphere of a working railway of the steam age where visitors can examine the rolling stock close up, study the many other fascinating items from a bygone age or just sit and watch the trains go by.

Further information for visitors is available from the Great Western Society, Didcot Railway Centre, Didcot, Oxfordshire OX11 7NJ.

Below: A restored loco (No 5322) with renovated goods wagons.





Harwell Artists (1)

CLUTTER *by A. V. Hitchman*

COUNTRY QUIZ (1) PICTURED HERE IN THE EARLY PART OF THE CENTURY, THIS COUNTRY INN STILL PRESENTS A STORY-BOOK APPEARANCE WHICH CONTRASTS WITH 20th CENTURY TECHNOLOGY NEARBY. INSIDE IT IS STILL MORE ONCE-UPON-A-TIMEFIED, YET MODERN ENOUGH IN OTHER WAYS TO ATTRACT THE NEW COUNTRYMAN OF THE JET SET. WHERE IS IT?
ANSWER: THE BARLEY MOW, CLIFTON HAMPDEN.

Photo: British Rail, Western Region

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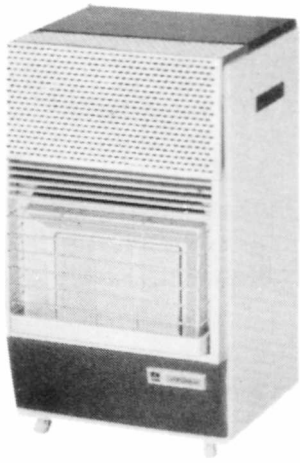

Infradex Alvima Ⓢ Three settings for up to 4kW output. Finish in cream stove enamel with simulated wood lower panel and lid.
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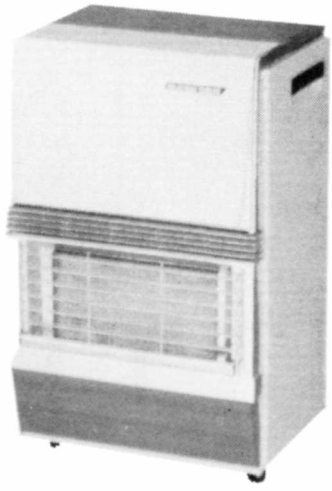

Super SER F90 Ⓢ Up to 4.25kW output with three heat settings. Simulated wood veneer and chrome trim.
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TIGER *by T. F. Duncan*

THE EBB OF THE YEAR

"First and foremost, the world is still building ... For the success of the universal effort, in which we are at the same time the partners and the stake, pain is inevitable."
Pierre Teilhard de Chardin

The last corn is carried;
The far fields lie clean and bare, all bright as summer sands.
Soon soft tides of mist will lap the orchard trees
And apples, danger-striped with wasps, lie brilliant in the grass.
The year is ebbing.

The dry straw is fired;
A final flame of summer flares to autumn through the woods,
And shoals of starlings, homing to noisy roosts, stream
Past the long reefs and dunes of cloud across the ebb-tide sky.
The light is fading.

"'Tis the ebb of the year I fear —
I fear his going. Despite the care, so many old leave then."
In the thin wind she wept. I panned my meagre thoughts
Seeking a comfortable word among my mind's stones and trash.
A man is dying.

The last leaves have fallen;
Yet even now the sap surges because the old leaves die.
The world's a tree and we, its leaves, reflect the hazards
Implicit in its growth. Only by dying may we live.
The world is building.

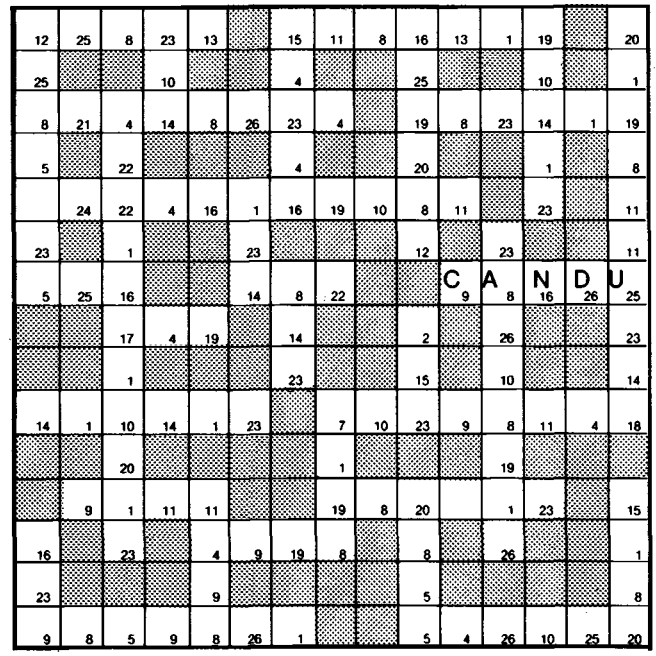
Biddy Wheatley

From the illustrated collection of poems, 'Emblems of the Wind' written by the wife of Chris Wheatley of Metallurgy Division. It covers a variety of subjects from the serious to the not so serious. They include birds and animals, growing old, the countryside and man's inhumanity to man.

Biddy Wheatley comments on conditions in South Africa, Northern Ireland and Bangladesh and on man's misuse of the world's natural resources and his apparent disregard for a healthy environment.
Emblems of the Wind — £1.70 from Whycot Press, White Cottage, Main Street, West Hanney, Oxon.

CONTRIBUTIONS FOR THE NEXT ISSUE

BEFORE JANUARY 29
ROOM 4, BLD 328
AERE HARWELL



This Crosscode has one clue: that of the Canadian reactor CANDU. Transcribe the letters from the word given to where the same numbers reappear and help to form other words, many in the field of nuclear science.
If unable to solve it wait for its resetting as a conventional crossword in 'Harlequin News-sheet' when a prize of £5.00 will be offered for the first correct solution opened on the closing date to be announced.

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812357, 814657 & 815334
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