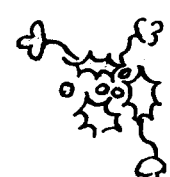


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*Merry Christmas*



Bush Telegraph  
1983



# BUSH

vol. **25** no. **7**

# TELEGRAPH

the magazine of

# R&EL

wood lane



Cover

by  
George Price

Editorial Board

Peter Walters  
Ted Morrison  
Geoff Holder  
Dave Green



## EDITORIAL

In the past mention has been made in this column of the functions of an editorial . This month the primary function is to say a heartfelt thankyou to all those who have contributed to the BT in the past year , particularly the ladies of the Typing Pool , and Bob Maidlow and Doreen Greenbury of the Studio . Thanks also go to Ian Fordham , who has helped out with developing and printing of photographs during the recent disruption (rather reorganisation) of the Studio .

We are pleased to write that there has been some response to our appeal for new members of the Editorial Board , at least one new name may appear in our next issue . In addition to our need for new Editorial Board members , we have an ongoing requirement for help in assembling the BT once it has been photocopied . This is an activity that takes three of us up to four lunchtimes to complete at present . We would like to reduce this time in future , any volunteers ?

To continue with our plea for help .... Notes , photocopies and reports are often sent to members of the Editorial Board with the suggestion that they might provide the basis for articles in yhe BT . Often , these are simply 'space fillers' and require little modification , for which we are thankful . Others require extensive rewriting . We would be grateful if we could be regarded in the main as Editors , not writers of many of the articles that are published . So , if you think that you have a topic that might form the basis of a BT article , write it up yourselves and send it to us .It would make us happier and will prevent the BT from becoming too stereotyped in its format .

Last but not least , a Merry Christmas and a Happy New Year to you all .

# CHRISTMAS MESSAGES

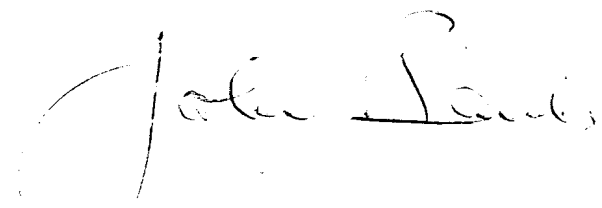
FROM: MR. JOHN BANKS, MANAGING DIRECTOR,  
GROUP SERVICES AND CHAIRMAN, R&EL.

1983 must have seemed a hectic year to all of you. Not necessarily the best atmosphere in which to do creative work but an obvious consequence of the way in which technological change is impacting on business and on the manufacturing scene in particular. My work with Wood Lane tells me that your reactions are robust, that a good spirit prevails and that you are increasing the contribution you are making to the prosperity of the Company. Thank you.

During a year many faces change. We have had to say good-bye to many old friends but we have had the great pleasure of welcoming many new members of staff - the pleasure of helping them to become members of the team, to receiving from them the new kind of contribution the changing scene demands. A Research establishment must be both a generator and a recipient of constant change.

But Christmas is a very personal and family time, a time for home. Many of you spend much of your time travelling, you have work contacts throughout this country and the World. Though you are accustomed to relaxing in strange surroundings I know that you will all enjoy and value the holiday period. May the occasion be restful, active, peaceful, joyous - whatever you wish it to be.

My best wishes to you and your families for a Merry Christmas and a Happy New Year.

A handwritten signature in cursive script, appearing to read "John Banks". The signature is written in dark ink and is positioned in the lower right quadrant of the page.

FROM: DR. GEORGE MOORE,  
EXECUTIVE DIRECTOR, R&EL.

We will remember 1983 as an interesting year which illustrated well the variety & scope of our work. We have been deeply involved with our established cable businesses, our work on Hong Kong doors related to a business we have sold, and we received approval to set up a new Communications Company in Hemel Hempstead based on Wood Lane R&D. My colleagues and I would like to thank staff for their help & co-operation in our work programmes and in bringing many to successful conclusions.

The Company increasingly recognises that the need to exploit technology is vital for a prosperous future. We therefore have a key role to play in BICC, and our work must be relevant, courageous, and of high quality. However, with the current difficult business scene we have a duty to be efficient and effective in using our increasingly expensive resources.

We continue to enjoy the Bush Telegraph and on behalf of all Wood Lane staff I would like to thank the editors & contributors for their work during the year.

Once again we welcome Christmas with joy & thanksgiving and as a time of reunion with family & friends. As we remember our blessings we are also conscious that times are hard for many people in our Country and hope that 1984 will bring better times for all.

I wish you and your families a Happy Christmas and a Happy New Year.

*George Moore*

# PERSONNEL NEWS

STARTERS Welcome to :-

John Helliwell , who joins as Head of Dept. , Computer Aided Batch Manufacture .

LEAVERS Farewell and best wishes to :-

Mary Siva , who leaves Polymer Materials/Processes .

RETIREMENTS Best wishes for long and happy retirements go to :-

Doreen Williams , who retires after 14 years service .

Molly Nalon , who retires after 29 years service .

LONG SERVICE AWARDS Since September 1982 Long Service Awards have been made to :-

J.C.Clarke	S.M.Castle
B.H.Keene	Mrs M.Jackson
P.V.Andrews	R.G.Hammond
C.Knipe	J.T.Ruben
J.M.Battle	G.R.Shah

M.J.Poole

We apologise for the delay in announcing these awards (due to a slight communications problem) . If anyone has been left off the list , please let us know .

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## APPRENTICE'S VISIT

### Visit of BICC Apprentice of the Year to Wood Lane

During the summer, the BICC Apprentice of the Year, Paul Beardwood spent some time at Wood Lane and went on a number of trips with, amongst others, Andrew Ainger and Derry Moore. One of these trips was to a mini-computer manufacture in Ireland, a trip on which Andrew and Paul were accompanied by Alistair Sutherland.

In his report on the trip Paul described their flight from Liverpool to Dublin, the high level reception they were accorded in Ireland and details of the factory. Once at the factory, the visitors were given a guided tour and took the opportunity to have a close look at their host's manufacturing, test, repair and quality assurance methods. Paul has given a detailed description of the assembly of printed circuit boards at the factory and the checks that are required before, during and after final assembly of the computers.

To conclude his report, Paul thanked BREL for organising a most interesting trip which gave him some insight into computer manufacture.

# RETIREMENTS

Mrs I.M.Nalon



On Thursday , October 27<sup>th</sup> , a large number of friends and colleagues gathered together to wish Molly Nalon a very happy retirement . Molly was born in Eastbourne and educated at Mill Hill . She joined Wood Lane in 1954 after working for BTH and the National Institute for Medical Research (now the MRC) . Molly was employed as an electron microscopist and she has used her skill to develop both optical and electron microscopy for the examination of new materials for the cable industry . Photographs she has produced over the years , ranging from mites in rubber to spherulites in polypropylene and , more recently , phase distributions in polymer blends , will remain as vivid images in the minds of those who have seen them . . .

Molly is well known for her compassion towards animals , particularly the cats around the site , a fact reflected in the retirement messages on the presentation card . These messages reflected her popularity among her colleagues .

Stefan Verne , who presented Molly with some sophisticated photographic accessories to further her twin hobbies of photography and genealogy , paid her many compliments on her skills and the important contributions she had made to vital projects . In reply , Molly said that she had found the work at Wood Lane enjoyable and stimulating , and would miss her friends although she would drop in from time to time . With regard to Stefan's remarks , Molly thought that he would be the first to admit that she might , at times , be forgiven for not realising the high esteem in which she was held . She thanked all those who had contributed to her leaving present .

After the main presentation , flowers and other mementos were received by Molly from individual groups of friends .

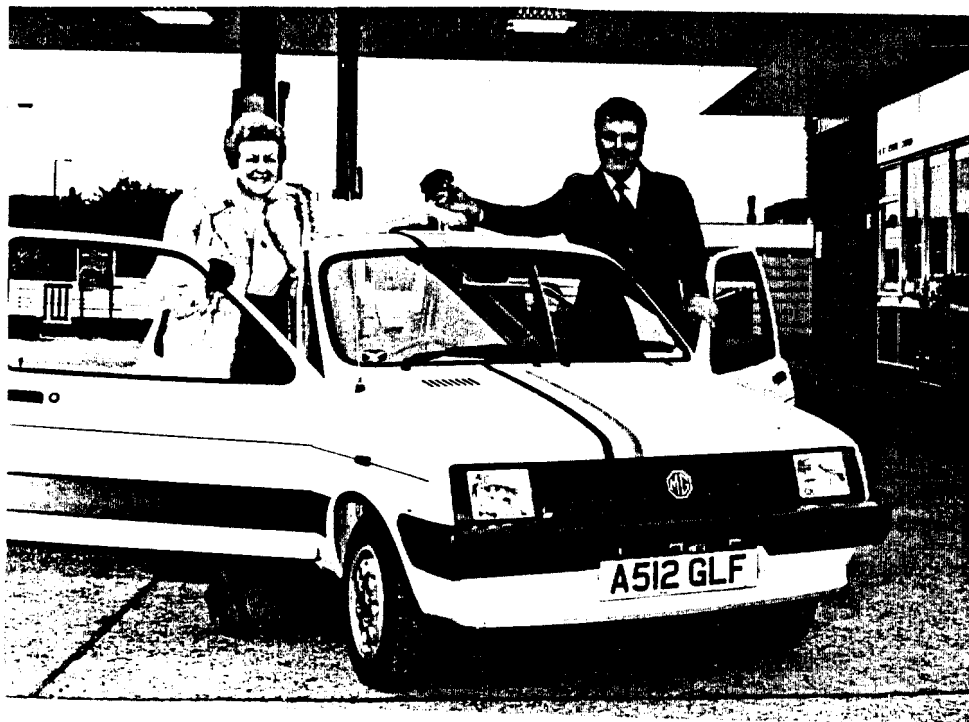


Miss D.M.Williams



Miss Williams (Doreen) retired on September 30<sup>th</sup> from the Analytical Chemistry Section , which she joined in 1966 . Prior to coming to Wood Lane , she had worked as a chemist in the food industry for some 20 years , at J.Lyons and Company . It was a mark of her ability that she accomplished , very successfully , the transition from foodstuffs to plastics- and all the gooey messes that analysts get confronted with from time to time . Over the years she became noted for her skill at thin-layer chromatography , a fact which was not overlooked at her retirement presentation . After being presented with a camera , that had been subscribed to by her friends and colleagues , she was invited to spray one last chromatogram . This was a giant one which , when developed , listed many of the names of her colleagues .

# CONGRATULATIONS



Maureen Jackson became a 'page 1 girl' on November 4<sup>th</sup> when she appeared on the front page of the Ealing Leader . Nothing notorious about this appearance , however , for the article and accompanying picture described Maureen's success in winning the top prize , an MG Metro , in Esso's Superlube Competition .

To quote the Leader , " Competitors were asked to complete the line , "Protecting my car's engine with Esso Superlube , the striped protector , is important to me because ..." ". Maureen's winning line was , " ... it protects all moving parts , that's fact , not friction " . The picture , above , shows Maureen receiving her prize .

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## QUESTION

What has 5612 loose ends and many have stopped you getting to work in August?

Answer on page 24.



# TYPING ERROR?

I. From the Daily Telegraph Television page of October 31st.

"8.10 PANORAMA - After the invasion, Panorama examines the aftermath of the Grenada invasion. Cheerful comedy".

II. From a BICC Press Release of March 6th:

"The BICC Group will be exhibiting a ..... at the 1983 Hanover Fair to be held in Dusseldorf from 13th to 20th April".

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## LETTERS TO THE EDITOR

Dear Film Society, (via BT )

My four line letter appears to have ruffled a few feathers. However, you seem to have missed the point. The Film Society is sponsored by Wood Lane Social Club. You should therefore make every attempt to provide a selection of films which appeal to as wide an audience at Wood Lane as possible. Remembering some of the Social Club members have families, I don't think it would have been too much to ask for at least one film with a "U" or "A" certificate.

Clearly I do not agree that this season's selection is a "balanced" programme. I also cannot see why a "commercial" film should be discounted. Such films usually provide a certain amount of escapism and relaxation, which I and many other people enjoy. I don't think I could "escape" with any of this season's films.

MIKE DENTON

To The Editor, The Bush Telegraph

Dear Sir,

Recent letters to the Film Society, published in the last two issues of BT, illustrate the problem that we the Committee have in getting feedback from all Social Club members. I am dismayed to have to read of "widespread comment" or "I and many other people" (apparently dissatisfied) and then have to judge what is a truly representative view. Without this information, as suggestions or criticism, the Committee has to rely on its experience and the reaction of those who do go to our films. In addition films with wide audience appeal, as indicated by Film Polls, do not always result in increased attendances.

As far as our selection of films for the season is concerned, I am not prepared to quibble any further on definitions, and will therefore concede that they do not fall into the categories that seem to appeal to Mr. Denton. However it is still the Committee's view that, by being more in the spirit of a true film society, interest may revive.

In conclusion, I would like to stress that, aside from direct communication, the Committee will answer any questions, accept any criticism or suggestions, at the next Film Society AGM in April 1984.

Sasha O'Bow-Hove,  
Chairman,  
BICC Film Society

# GET WELL SOON

We are very sorry to hear of the illnesses of three of our colleagues, namely Tony Docherty, Doug Latimer and Jack Balaam (who retired last year). We wish them all a speedy recovery.

A letter has just been received from Tony, which we are pleased to publish below.

Editor,  
Bush Telegraph

7th December, 1983

Since being popped into Guys' following my heart attack, I have been inundated with visits, cards and messages of goodwill. At present I am not yet quite ready to individually answer all of your messages so I thought I should take advantage of Bush Telegraph collectively to thank all of you for your kindness and consideration and to wish you a happy Christmas and a prosperous New Year.

Yours sincerely,

Tony Docherty

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## FOR SALE

16K ZX81 Sinclair Computer complete with Teach Yourself Manual, Power Pack and Leads. Also 6 Games Cassettes, including chess, flight simulation and breakout.

£50 O.N.O.

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Ext 324

# HISTORY OF WOOD LANE

We have been delighted that many of our readers, particularly our 'pensioners' have taken a lively interest in the History of Wood Lane series. A number of letters have been received commenting on the series, among them this note from Harold Boulton:-

Some time ago I purchased from Hammersmith Library a copy of "Street Names of Fulham and Hammersmith published by Fulham and Hammersmith Historical Society, I found the contents very interesting but was surprised by the large number of street names that had a "possible" reason for being so named e.g. Macfarlane Road (1876) possibly after Robert Macfarlane who lived in Fulham Lane and was killed in King Street in 1804.

So when I read in Chapter Three of History of Wood Lane that Ormiston Grove was named after the second name of William Ormiston Callender, I checked in my copy of street names only to be disappointed by the following entry, Ormiston Grove (1878) possibly after place Midlothian or East Lothian.

Harold Boulton

Ted Morrison and Geoff Holder write: "Thank you for your note, Harold. We, also, have consulted the book you mention and have informed the Hammersmith Library of the more likely (in our opinion) derivation of the name of Ormiston Grove that we described in Chapter Three of the History".

## CHAPTER FIVE - THE MOVE TO WOOD LANE

The Buildings - Ferranti Transformers -

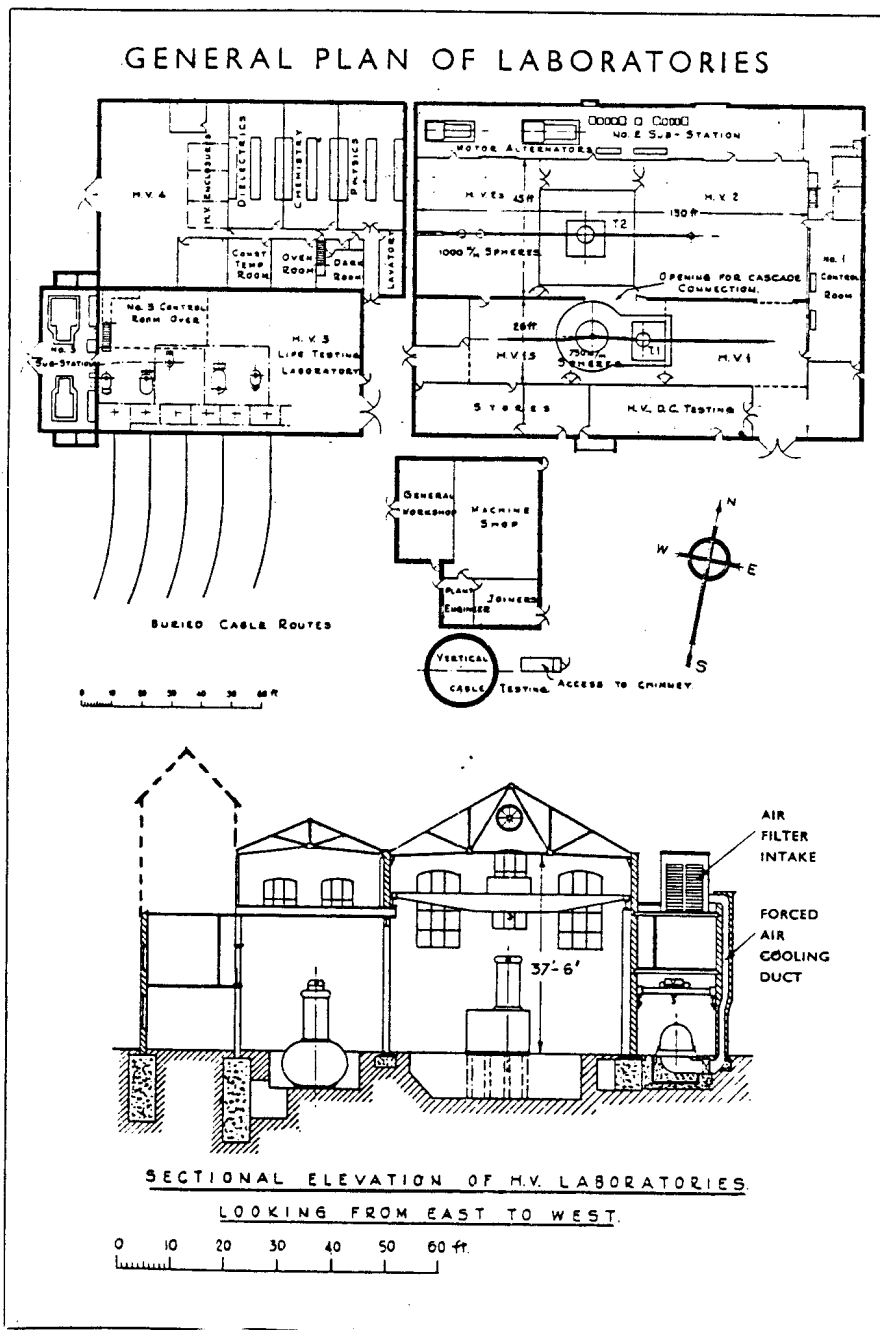
The Chimney - Alarms and Excursions -

Research Problems - "Arrested Failures" -

Magenta Dye Test - Application of

Pressure  
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When Callender's finally moved into Wood Lane, they were confronted with buildings which, so far as the North side of the site is concerned, have not greatly altered to this day. We refer the reader to the plan shown in Chapter Two (May/June edition of the B.T.), and to the picture of the "Exterior of Works" which accompanied it. The bunkers depicted over the South side of the works (later HV1) still existed, and similar bunkers had also been erected over the "second part" of the works (HV3), already mentioned in that Chapter. In other words, the buildings consisted generally of what we still know as HV1, HV2, H3 and HV4, and the "shell" of these main buildings has remained. In addition, there was the chimney stack, and to the north of this was a low building (the "economiser house" etc. - see plan, Chapter Two) which later became the machine shop, general workshop and joiners' shop. (See 1934 plan).



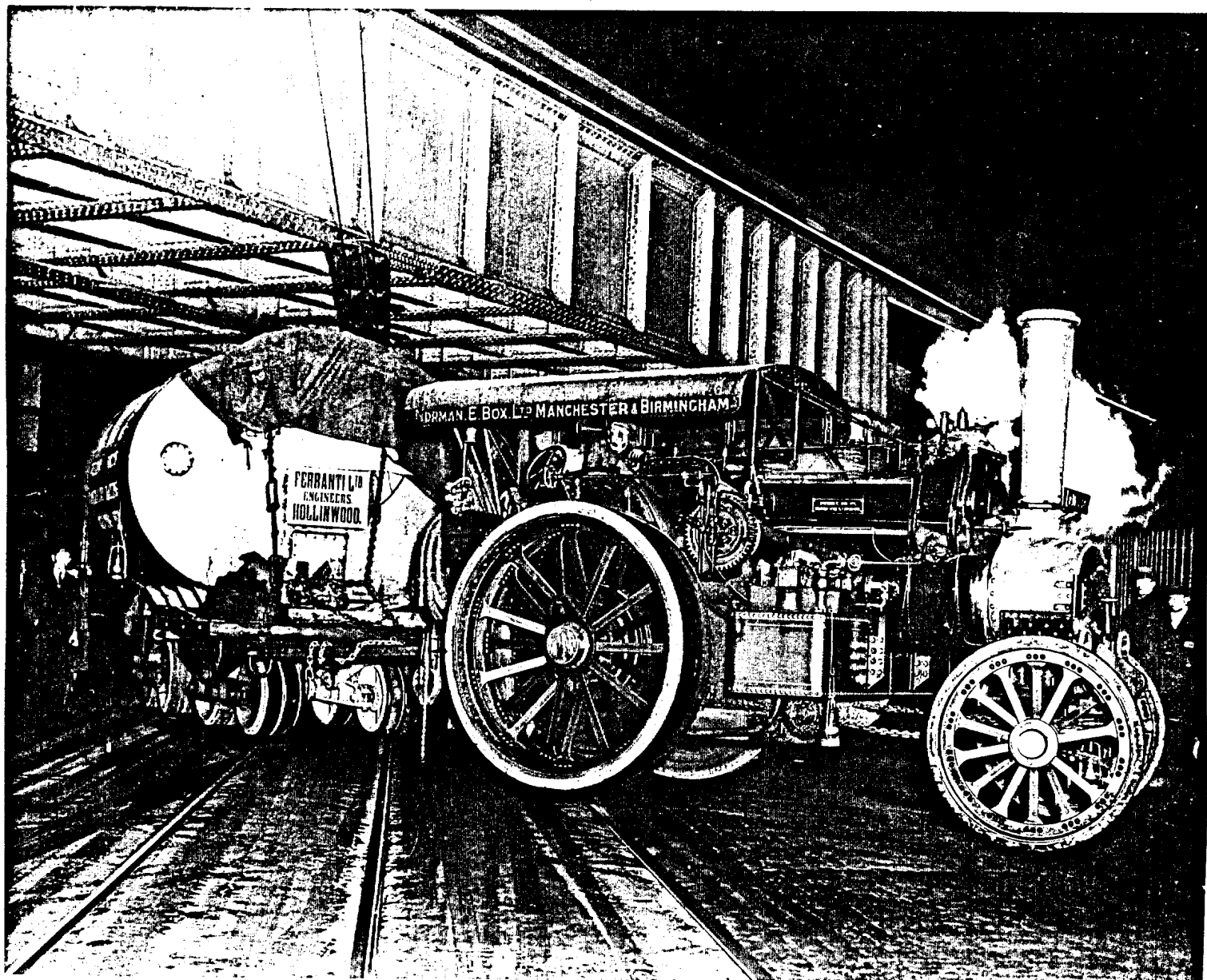
Taken from Souvenir Booklet, 1934.  
 (We have added the outline of the bunkers, shown dotted, which were not to be seen on the 1934 plan although they existed until the 1950s).

Alterations to suit the type of work to be carried out were soon commenced and these continued right up to the official opening in 1934. Initially, HV3 was used as a garage, but soon a control room was built on a mezzanine floor (still there today, used as office accommodation) and life testing equipment was purchased and installed. This became the initial home of O.T.D. The end of HV3 was extended to provide Substation No. 3 (see plan) which now houses the emergency stand-by generator. In HV4 the end section was originally built of corrugated iron and this was rebuilt by Callender's. Small laboratories were installed in HV4 to house Dielectrics, Chemistry, Physics and Photography.

In addition, a medium-sized laboratory was created for general purpose investigations up to 120 kV. Here, investigations into joint and sealing end design and tests on short lengths of high voltage cable, were carried out. This laboratory was generally concerned with the theory and mechanism of breakdown of cable dielectrics. The two main easterly buildings (HV1 and HV2) were allocated to high voltage life tests on cables and auxiliary apparatus, and flashover tests on porcelains. In a corridor

to the north of these two sections were installed the switchgear and motor alternators supplying the transformers necessary for this work.

Two Ferranti transformers were purchased and these arrived at the beginning of 1933, being hauled all the way from the north of England by a fine specimen of a traction engine owned by Norman E. Box Limited of Manchester. Photographs taken from the Company's files indicate that the transformers which, of necessity, arrived late at night, presented a difficult problem in negotiating the turn from Wood Lane into the private road (which is now Ariel Way and no longer private) and it was necessary to remove the central gate-post. The traction engine was eventually "parked" in HV2. Whilst the engineers were installing the transformers they lived in a caravan on the site.

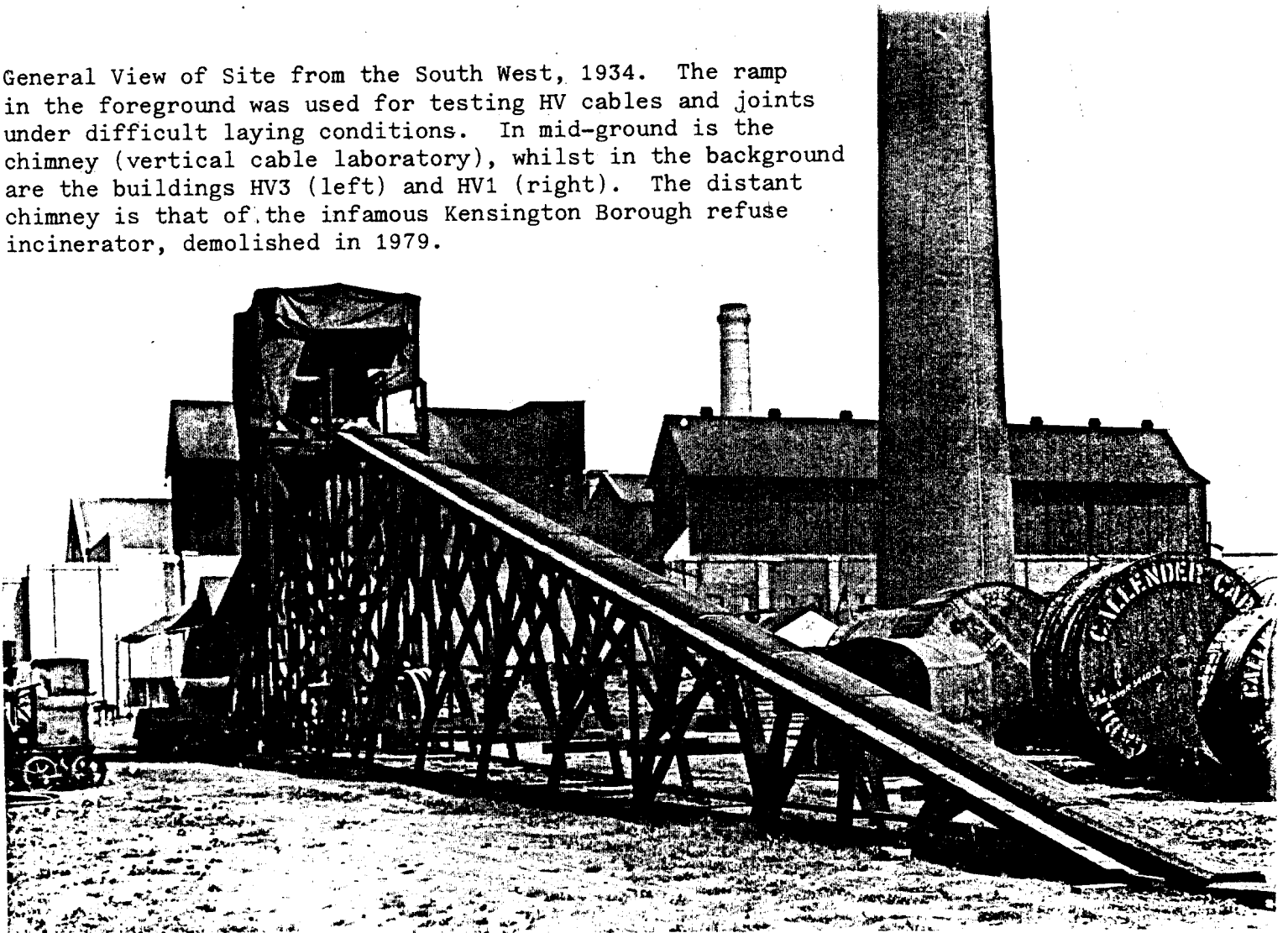


Arrival of Ferranti Transformers, 1933  
(Note tram-lines in Wood Lane)

Before installation could be effected and, indeed, before the transformers had arrived, a great deal of time and energy had to be spent in the preparation of the pits. Early on it was discovered that the concrete floor of HV1 and HV2 was so hard that the ordinary pom-pom drills were useless. Granite aggregate had been used in the concrete and eventually the pits could only be prepared by using rock drills! Even when the pits had been made a difficulty still arose in the form of flooding. One of the pits continually filled with water despite repeated attempts at waterproofing the walls and floor. Eventually it was discovered that a water main had been damaged when the pit was originally dug.

Much has been written about the various departments at Wood Lane, but little mention has been made of the chimney stack. This was converted for use as a vertical cable testing laboratory. Originally the chimney was 210 ft high. In November 1931, however, the top 20 ft was removed owing to cracks. At the same time the fire-brick lining was removed, a concrete roof put on the chimney, an entrance cut to the base at ground level and a steel stairway installed up to the first 120 ft, consisting of six ladders with landings at every 20 ft level. A working platform was erected at the top of the stairway. By these arrangements it became quite easy for clear vertical runs of 100 ft of high voltage cable, such as may be required in power stations, for example, to be installed and tested. This "laboratory" was connected by duct line to the life testing laboratory so that tests could be carried out either with transformers located in the base of the chimney, or with transformers located in HV3. Work on the chimney was carried out by Altitude Limited, and to complete the work a new lightning conductor was installed. Later, in 1934, the chimney was rebanded.

General View of Site from the South West, 1934. The ramp in the foreground was used for testing HV cables and joints under difficult laying conditions. In mid-ground is the chimney (vertical cable laboratory), whilst in the background are the buildings HV3 (left) and HV1 (right). The distant chimney is that of the infamous Kensington Borough refuse incinerator, demolished in 1979.



Before the installation of the Ferranti transformers, a hodge-podge of high voltage equipment which had been collected at Ormond Yard was used. Temporary cages were erected around this equipment with whatever safety measures could be rigged up. Dr. D.M. Robinson, who joined Callender's at Wood Lane in 1931 and who later became President of the High Voltage Engineering Corporation of Massachusetts (suppliers of our Van de Graaff acclerator), tells an amusing story of how one evening just as he was going home he became a little concerned that the jointers might get one of their ladders too near a temporary high voltage line. This was 20 ft in the air and the wire cage only extended for about 10 ft. He cautioned Alf Rawlings (whom some at Wood Lane may still remember) and his mate about this. "The mate was a small man", Dr. Robinson goes on. "I said, 'Watch out. There is 60,000 Volts on that line'. The plumber's mate cocked one eye up at it and in inimitable Cockney accents said, 'That's all right, mate - I don't mind the even numbers!'"

As stated before, in those early days the site still bore the signs of the old Power Station. Railway tracks covered much of the ground and there was a large grass area on which cricket was played in the lunch hour. The railway lines also had two platelayers' trolleys running on them of the type that are moved by two people facing each other and pumping levers in a see-saw fashion. Part of the line was traversed by big double doors in one of the blocks, these usually being open. One day the inevitable happened. Somebody closed the doors without giving due notice. From that day on, the railway ceased to function at Wood Lane. Another escapade of those days was largely the result of the then current spate of gangster films starring James Cagney, George Raft and other tough guys. In these films, the gangster was inevitably led to the electric chair and when this happened all the other inmates of the prison learned of it by tapped messages on the pipes that ran through all the cells, which caused a terrific din. Wood Lane had such a system of pipes running through the various departments and again the inevitable happened, causing some of the "hierarchy" to throw fits because they could never trace the origin of the noise.

To anyone but an electrical engineer the role played by apparatus such as was installed at Wood Lane may seem a little puzzling. It is necessary therefore to consider what happens to a cable when it fails and how such failures can be accounted for by laboratory tests. In those early days informative laboratory tests were limited, but soon new testing techniques were developed - many at Wood Lane.

As already stated, it had been found that breakdowns on solid cables were attributed to successive heating cycles which caused the formation of voids in the impregnating compound, i.e. weak areas which could break down by ionisation due to high stress.

The next logical step, therefore, was to study the exact process by which a cable failure developed when the cable was tested under severe conditions in the laboratory.

Some breakdowns were very simple in appearance, consisting of a clean radial hole between conductor and earth. In others, scorched and brittle papers were found, particularly in the inner portions of the dielectric. Others were accompanied by tree-like or fern-like patterns of carbon, which usually occurred near the centre of the dielectric wall and were associated with dry patches where scarcely any free impregnating oil remained. On the other hand, there were in existence lengths of cable which had given satisfactory operation for years and were perfectly dry throughout, the impregnating oil having been replaced by a yellow wax-like substance (familarly referred to in those days as "cheese") which was neither fusible nor soluble in the usual organic solvents.

Small wonder then that the early investigators were baffled by the complexity of the breakdowns, and turned with relief to the Schering bridge as a method of keeping a watch on the dielectric losses during the life of the cable.



Unfortunately, a sufficiently sensitive recording wattmeter or recording bridge did not exist, and when the measurements could only be taken at intervals it was very easy to miss the small overall rise of power factor which was caused by a severe local loss. A cable on a life test, or under conditions closely simulating service operation, might behave excellently for months and then fail suddenly, without any previous warning obtained from the daily or weekly loss measurements. This became such a common experience that some engineers were led to believe that cable breakdown was a mysterious affair, taking place suddenly without apparent reason. Obviously little progress could be made from examination of faults occurring in service, partly because the exact conditions and past history were unknown and also, because the fault-arc invariably burnt out most of the evidence before the protective equipment could operate.

Investigations of the mechanism of breakdown necessarily started in the laboratory, but in order to be certain that the conclusions were applicable the laboratory had to be capable of "full scale" research and, furthermore, the results had to be correlated with all possible evidence collected from cables in service.

Many kinds of test were suggested and used with the object of assessing the quality or determining the safety factor of impregnated cables. There appeared to be three types to which most of these tests belonged, viz:

- (1) The voltage/time-to-breakdown test.
- (2) The stability test.
- (3) The accelerated ageing test.

For many years it had been known that a cable subjected to excess voltage might develop local hot spots and that if the voltage was maintained the cable frequently failed at or near the hottest of these points. By attaching a large number of thermometers or thermocouples to the cable and keeping a continuous watch on these, it was possible to obtain advance information on the condition of the dielectric all along the cable without cutting the lead sheath and disturbing the normal pressure conditions. It became particularly easy to obtain such information by use of an automatic thermocouple recorder developed at Wood Lane by Dr. Brazier.

This device became of the greatest assistance in the laboratory examination of the mechanism of cable failure, and it is no exaggeration to say that without some such system much useful information on cable behaviour would never have been obtained.

In the past laboratory tests on cables had generally been continued to breakdown, largely because no warning of failure was available. It was felt, however, that it would be more instructive to stop the test before the final arc occurred as the latter generally destroyed much of the evidence of interest. The "arrested failure" could then be examined, as described later. Frequently some hours elapsed between the first observation of the rise of temperature on the recorder chart and the actual breakdown, and with the help of the temperature recorder it was found possible to stop tests in all the various stages, and thus to show how the deterioration progressed to breakdown.

The cable the failure of which had been arrested in this way was then subjected to a post-mortem. The papers were removed from the section near the "hot spot" until anything unusual was noticed. When any doubts existed as to the mechanism of the failure, or the point of origin of the trouble, the Magenta dye test was applied. This test, which had been developed at Wood Lane by the then Chief Chemist, Mr. G.M. Hamilton (later Director of the Paint Industries Research Institute at the University of Natal in Durban) made use of the fact that the wax formed from the cable oil as a result of ionisation was insoluble in the usual organic solvents (petrol, benzene, etc.) and, further, that this wax remained on the papers where it was formed, adhering closely to the paper fibres. Thus the tapes taken from the cable could be extracted in petrol to remove the oil and if they were then dyed, the wax, which would not take up the dye, would show up very plainly. Magenta dye had the further advantage of giving good contrast in photographs. By means of this test traces of wax quite invisible on the original papers could be clearly seen, the wax taking on different shapes and forms according to its position and method of formation.

The mode of formation of voids in the cable dielectric and the mechanism of their subsequent breakdown were thus elucidated, but the problem of the prevention of such failures still remained as a serious challenge to the cable manufacturer.

An increase in pressure does not result in any radical alteration in the mechanism of breakdown. The pressure results in the suppression or extinction of the ionisation until the electric stress has reached a higher level, but at this level the same phenomena occur.

The whole field had been thoroughly surveyed in a comprehensive manner in patents taken out by Fisher and Atkinson in America in 1922, in which every possible method of utilising pressure in conjunction with a cable was covered. These patents, however, appeared to have been in advance of their time, and it was not until about 1930 that the matter was actively investigated by cable makers.

The first question to be determined was the amount of pressure necessary to prevent the ionisation of cable voids and the highest pressure that could be used in order to obtain the maximum advantage. To answer this question a pressure vessel was constructed in the laboratories incorporating two electrodes between which were sandwiched layers of plain or impregnated paper. To such a system a variable gas pressure could be applied at various voltages between the electrodes. It was possible to watch through a viewing window the extinction of the ionisation as the pressure in the container was raised.

It was soon learned that above a pressure of 200 lb/in<sup>2</sup> there was little improvement obtained on further rise of pressure. This figure became generally accepted and proposals for gas pressure cables were largely based upon a maximum pressure of 200-250 lb/in<sup>2</sup>.

The next problem was a method of applying such a gas pressure to a cable. Fisher and Atkinson proposed using a high pressure gas, such as dry compressed air for instance, applied to the dielectric of a cable in such a manner as to raise its breakdown strength to a point at which ionisation of the vacuous spaces was completely suppressed. Furthermore, they thought that since voids no longer constituted a menace there would

be no need for the elaborate precautions hitherto adopted to eliminate them during manufacture. Pursuing the idea to its logical conclusion they reasoned that the impregnating medium itself was unnecessary, and that dry paper alone could be used as the dielectric, the occluded air being maintained under compression would thereby have its breakdown strength raised and ionisation would not occur. The patent, however, gave no indication of the practical methods of implementing this technique and as Ferranti was heard to remark, "Ideas are generally cheap and easy, but to carry them out is a very difficult matter".

In Great Britain where no corresponding patents had been taken out lively attention to the problem was given by four of the largest cable makers, including Callender's.

There was general agreement, in the initial stages at least, that the proposal to dispense with impregnating compound altogether was too sanguine, but this raised a major issue on which opinion was sharply divided.

One school of thought maintained that the use of gas in contact with the impregnating oil was unsafe, and that the gas pressure should be exerted on the dielectric via an impermeable membrane or diaphragm, e.g. a thin lead sheath. Others held the view that, provided an inert and therefore non-reacting gas such as nitrogen was used, no adverse effect need be expected from contact between the gas and cable compound; also that the introduction of a diaphragm would unnecessarily increase the weight and cost of the cable.

Thus, though the fundamental principle of the application of high pressure gas provided the basis for all cables of this type, this early divergence of opinion resulted in the development of two major classes of gas pressure cable, which may conveniently be referred to as the indirect pressure (or diaphragm) type, and the direct pressure (or non-diaphragm) type.

Of all the ideas that were put forward, probably the design which came the closest to the original Fisher-Atkinson conception was the dry gas pressure cable, designed at Wood Lane by Dr. A.N. Arman, and which is best described in his comprehensive paper which was published in 1937. The paper was entitled "The Gas Impregnated Cable" and described six years of experimentation which commenced early in 1930.

Whilst considerable time and energy were spent on the design of the dry gas pressure cable, Callender's were also interested during the early thirties in other designs of cable which would be capable of withstanding still higher voltages. The work culminated in the successful design of the compound impregnated gas pressure cable and will be described later.

Ted Morrison and Geoff Holder

TO BE CONTINUED

# LETTER FROM NEW ZEALAND

"CUMBRIA COTTAGE"

23rd June, 1983

Dear Friends,

Well, here I am once again writing to you from the out flung corners of the Empire! Sorry! The Commonwealth of Nations. Actually the latter sounds much more impressive, but I (and many more "oldies" I suspect) still think of our great Empire as it was in the heyday of power and pride.

First Ann and I received the May-June edition of the "Bush Telegraph" and again read it with avid interest. Pride of place this edition must surely be the photograph of our "Willie", Dr. Allsebrook, receiving his presents from the Research Manager Mr. S. Verne. Also the very interesting article concerning his many scholastic achievements. If I remember rightly he was also involved in the early development of the Cook Strait Cable, with his colleague Mr. Kitchie. Actually, at the present moment, one of the latter named cables is very "shakey" and according to our media the N.Z.E.B. is thinking seriously about laying another three power cables across the Straits - figures quoted 35 million dollars. I guess no doubt the powers that be in the BICC will have this contract in mind for the future. If and when this does materialize, I might be still around to watch the cable ship pass on its way to the laying position! That will bring back many memories of twenty years ago.

Now back to the B.T. and the very interesting map of Hammersmith, 1746 supplied by Ted Morrison - the good old days - I wonder if the press gangs ever wandered around Brook Green and elsewhere to pick up likely lads for the Royal Navy - "wooden ships and iron men". Of course in my day it was "iron ships and wooden men"!

The article on the History of Wood Lane is also very interesting, also photos of the huge water tube boilers, engine room etc. The old tunnels mentioned were well known to me, having to visit the pumping location quite often. Could almost feel the ghostly presence of the old firemen of long gone days, no doubt stripped to the waist amongst the heat and glare of the ash pits. These stokers must surely have had "Hades" on their mind when going below on their hazardous shift.

Now to New Zealand, the "Shakey Islands" so named by our neighbours across the Tasman. Tremors are so frequent here we just take them for granted, silly really because we could get a "Big One". Anyway, Ann and I live at the foot of quite high hills, 600 - 800 feet, so we would surely make for a safe haven well above any following tidal wave. It would be very interesting living amongst rabbits and possums, - no shortage of fresh meat did someone say?

No doubt any rugby fans amongst you will know The Lions are touring New Zealand, doing very well against our

Provincial sides, having lost one game only - to Auckland 13-12, but failed in the first two tests against the All Blacks. At Canterbury they went down 16-12 and last Saturday 9-nil at Wellington. This game was intended to be shown "live" in Britain but owing to industrial trouble at the BBC T.V. this wasn't possible. If the game had been beamed across the sea viewers in the Old Country would have truly been amazed, - a north to south wind blowing, gusting to 70 kph, the goal posts were actually moving 3 or 4 feet at the top of the poles, the surrounding hills were white with snow, and the temperature was down to 4°C. Never known to have snow in these parts since settlers landed 150 years ago. I guess the controller of the elements was just waiting for me! The past three weeks the weather hasn't been very good, cold, high Southerlies and rain, with very rough seas. In fact at times the road past our place becomes strewn with huge masses of seaweed. The latter is very good for the garden, so it is an "ill wind ....." - I might say it is much better than collecting horse manure!

Now we have the sun shining blue skies and quite mild, 14°C. I note London had good weather reports and warm. Yesterday was the day we were looking for - June 22nd, shortest day South of the Equator. So now the sun will begin its long trek back to the Southern Hemisphere until finally Dec. 22nd and our Mid Summer's Day. Both Ann and myself do hope you have many days of sunshine yet to come in the U.K. July and August are usually good months, but of course very wintry here.

The general election is now past and will be just a memory when this letter of mine is read in the B.T. Being a true Blue I pray for prosperity in our little island across the sea, and both Ann and I say with pride Great Britain and mean it - and Ann being from "North of the Border" that really means something! I will finish this letter at a later date, hoping by then the 'Lions' have at least drawn the series? Also can Ann and I add our Best Wishes for a happy retirement to Wally Hemming, he and I having much in common, Wally having spent many years service in the old B.O.A.C. and travelled world-wide in the course of his duties. But of course travelling from 'A' to 'B' much faster than I did, ploughing the seas! Our Best Wishes also to Debbie who is expecting her first baby. Ann and I are sure the baby will be lovely (like its mum!) Well folks bye for now, and I'll finish this letter later on, in our Springtime!

Sept 6th.

Well dear friends here I am once again to complete my letter which I started late June. Again I must stress how time flies, from our mid-winter until our New Zealand Spring which officially started on Monday September 1st. During the winter months many parts of both South and North Islands have

experienced dreadful storms, with heavy rainfalls in the North of the South Island. The farm lands around Blenheim and Nelson have been devastated, with damage running into millions of dollars. Further South in the Queenstown area the snow fields have had a bumper season for the skiers; in fact they come from all parts of the Northern Hemisphere to continue the sport during the Northern Summers - and what a wonderful Summer it has been in the U.K. We have been quite astounded at times when reading the temperatures, London 33°C - I can imagine the lovely tanned bodies ..... in fact we had pictures of Hyde Park and the sun worshippers, some very scantily clad! Ann tells me I write too much about our little country's sporting achievements - she thinks the latter cannot be of much interest to the ladies in Wood Lane. Well, maybe not, but before leaving the sporting scene how can I fail to mention the mighty 'All Blacks' and their wonderful wins against the British Lions! The men in Red completely routed in the test series and humiliated in the fourth and final test. And yesterday early morning I watched New Zealand beat the world in the coxed fours and eights. I wonder what the great nations must think when they see the men in Black beating them all past the post? And this is a country with only 2000 oarsmen, who rely on public subscriptions for the money to travel, in fact the clubs were still 25000 dollars in debt! Well, enough of sport, what can I say of interest to the fairer sex? For the housewives amongst you, I note in last night's paper, Tararua mild cheese is selling for £1.15 for 2 lbs and Tararua (tasty) at £1.40. I think that is cheaper than U.K. prices. Cigarettes for you smokers - proprietary brands are now selling at 60p for 20, in fact they were increased from 56p in the last budget. Meat is still a reasonable price (at least we think so), best steak around 90p a lb and many other cuts much cheaper. The prices of houses have gone up since Ann and I came out here 3½ years ago. The average three bed-roomed house now sells for around £35 000. People unfortunate enough not to own their own home pay high rents, min. £25 max. £60 weekly. Thank goodness "Cumbria Cottage" is freehold. Our outgoings for 1981-82 i.e. T.V., Rates, Car and House insurance, gas and electricity and phone averaged \$24 weekly (approx. £10.60). The £1 sterling is still strong, so us Pommie O.A.P's are doing all right!

The days are growing longer and in a few weeks Ann and I will be taking our first dip in the sea across the road from our home. I'll be soon trying my hand in the garden, (spuds and veg. - afraid I'm no expert). I shall finish now and as usual will start another letter in our New Zealand Summer. Thank you for the August edition of the Bush Telegraph and the very interesting History of Wood Lane.

Sincere Regards to All Our Friends,

Ann and Vic Denholm

# SECTION REPORTS

## THE FILM COLUMN

It is with much relief that I can report that the 30<sup>th</sup> Season got off to a good start , with 46 members and guests present at our first show , La Cage Aux Folles . The film was very well received ( applause no less ) as shown by the reaction index that it scored 90% . Our new seating arrangement around tables made for a cosy atmosphere and was very useful for handling the superb food and wine that was on offer at the Soirée . It was a very pleasant evening , and thanks again to all who helped , especially Dave Goff behind the Bar .

Our second show , with Bleak Moments as the feature film , again drew a reasonable crowd of 27 . The reaction to both the animated films and the feature was very mixed . For some, Bleak Moments was aptly named , "appalling" , whilst others said that they could really relate to the problems depicted in the film and thought it was "very good" . For myself, it felt like running a mini-marathon , not wanting to give up , wishing it would end , and then finding many pleasurable facets of the film to discuss after it had finished . I think I'm right in saying that no-one was bored and many lively inquests started up after the show . The film scored 57% , which was probably about right . The two animated films , although reasonable were not quite as good as expected , and of poor film quality . Kaleidoscope was an ingenious film using coloured bits of glass to show a simple story - good wizard , bad dragon ( more like a lobster ) , it scored 58% . Les Astronauts used a mixture of cartoon backgrounds and newspaper cut-outs in a story , if I understood correctly , of a lone scientist getting caught up in his home-made rocket in a "star war" two-power conflict . One can imagine Monty Python's Terry Gilliam being impressed by it , not our audience , who gave it only 45% .

### SUMMARY OF REACTION INDICES

<u>DATE</u>	<u>FILM</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>	<u>RI%</u>
October 26 <sup>th</sup>	LA CAGE AUX FOLLES	21	15	2	-	-	90
November 16 <sup>th</sup>	KALEIDOSCOPE	3	8	7	2	5	58
	LES ASTRONAUTS	-	3	10	7	5	45
	BLEAK MOMENTS	1	7	8	4	3	57

Some apologies are in order , for not indicating which films are subtitled . For the rest of the Season only The Marriage of Maria Braun (not Eva Braun ! ) and The Tin Drum have subtitles , both being in German . In answer to an interested party , La Cage Aux Folles was made in 1978 , Bleak Moments in 1971, Kaleidoscope in 1960 , and Les Astronauts in 1960 (\* estimated) .<sup>st</sup>

Two final points (1) The Little Island (21<sup>st</sup> March 1984) has been withdrawn by the distributor ( we'll see how the rest of the animated films are received in 1983 before choosing a replacement ) , (2) The Guardian has reported that the smash-hit musical version of the film, La Cage Aux Folles , now playing to enthralled New Yorkers , will be transferring to London . Frontrunners for the cast (still to be chosen) are Rock Hudson (Georges) and Danny Kaye (Albin) .

## HAVE YOU SEEN (?) COLUMN

First : Two outstanding films from Peter Weir ( of Picnic at Hanging Rock fame )

- (1) Gallipoli. A very moving anti-war film . Given the highest Reaction Index by the BBC Film Society last year , it certainly left me speechless .
- (2) The Year of Living Dangerously . The story of a "fresh" reporter caught up in civil unrest in Jakarta under Sukharno. The film has an electric atmosphere and is excellent .

Second : A sneak preview of two forthcoming projects from the world of R-W.T. (Restricted-Water Theatres)

- (1) Long Life in Venice II. The film-documentary of the 124-hour pedallo race through the Venetian canals . Breathtaking shots of the Col de Sighs (5m) , Gritty Palace (10m) and St. Polls (6 lagers) .
- (2) Not E.T.(c) Again. The rise and rise of a lumberjack head-feller in the high society of films . Just the ticket , in principle , although the plot is sometimes patently obvious .

NB. We find R-W.T. highly amusing and hope it continues . However , due to poor BF proof-reading\* , we must say that any coincidental similarity to any living or dead person is unintended and should not be libelled as such .

Sasha O'Bow-Hove

\* - typed from Sasha's script without alteration or any thought of the use of our blue pencil, just to show that we can take criticism ! (Editors) .

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## PHOTOGRAPHIC SECTION

1983 was an active year for the photographic section , involving over 70 members of the Social Club in various activities and services .

The competition was very popular and a large number of fine pictures were entered, leading to a well patronised exhibition in the Main Hall .

A magazine circulation scheme was started and gained in popularity throughout the year . Currently , five monthly magazines are circulated and some books have been purchased .

A selection of film has been stocked for sale at a discount price to members of the Social Club . Over 150 rolls have been sold this year .

The section budget has been used to purchase the following items of new equipment :-

- (1) Lubitel 166B medium format (6x6) twin lens reflex camera .
- (2) Cosina CT1G , a modern 35mm SLR camera .
- (3) Rechargeable batteries .

It is hoped to hold a photographic evening sometime in the new year for which we would like to hear of anybody interested in modelling .

For further details of any item please contact :-

Ian Fordham (ext.337)

Rob Come (ext.340)



## Bridge Section

The Bridge Section continues to thrive, being represented this season by four league, and four cup teams, involving a total of eighteen players.

The league teams play in the 1st and 3rd divisions of the Hammersmith and District league, and the 3rd West and 6th West of the London Business House League. The most successful of these being the 'A' team in the LBH, who are to date unbeaten. Each of the other sides have achieved limited success.

In the Hammersmith League K/O Cup the 'A' team have reached the semi final, and now have a difficult match against the League Champions and Cup Holders Hammersmith Flyover. A successful start was made in the London Trophy by defeating Grimsdyke Golf Club in the 1st round, by 2650 points, our opponents in the next round being Guinness 'A'.

The other two cup sides were both eliminated in the 1st round of their respective competitions.

Results to date.

### Hammersmith & District League

'A' Team v N.T.G. 'C'	Draw	10 - 10		
Servotonic	Won	115 - 11	K/O	Cup
N.T.G. 'C'	Lost	9 - 11		
Wimpey 'A'	Lost	8 - 12		
Watson House	Won	50 - 35	K/O	Cup
'B' Team v Lyons 'B'	Lost	50 - 53	K/O	Cup
Lyons 'B'	Won	13 - 7		
Flyover 'C'	Lost	7 - 13		
Lucas CAV	Lost	8 - 12		
C.S. Tennis	Lost	4 - 16		

### London Business House League

'A' Team v Nalgo	Won	11 - 1		
Linklaters	Lost	22 - 79	K/O	Cup
ST Dunstons	Won	10 - 2		
Esso 'B'	Draw	6 - 6		
'B' Team v GLC 'D'	Won	9 - 3		
MPA	Lost	5 - 7		
Des 'B'	Lost	5 - 7		

### London Trophy

v Grimsdyke Golf Club Won + 2650 pts.

## MODEL RAILWAY SECTION

In the last 12 months the section has circulated £42 worth of magazines, but under our shared costs scheme members have seen them all at a fraction of the price. The magazines cover models (Railway Modeller, Model Railway Constructor, Model Railways) and the real thing (Railway World, Railway Magazine). Anyone interested in joining the circulation list should contact Mike Hagger (x 268).

## GENEALOGY SECTION

### STRAYS

The 2nd collection of "Strays" (events recorded in one county about people from another) prepared by the Federation of Family History Societies is now on microfiche. Tony Borer has kindly donated a copy which will be kept in the Library with the IGI.

### 1984 CONFERENCES

The half-yearly Federation events in 1984 will be:

April 13-15                      Canterbury

Aug 31 - Sept 2    at    Norwich

In addition, the N.W. Kent FHS is organising a one-day event entitled "Town and Country - The Missing Links" at Sidcup on 12th May.

Further details from Mike Hagger (ext. 268).

### FEDERATION 10TH ANNIVERSARY

A "fun" event (definitely not a Conference) is being held on Saturday 9th June 1984 in the grounds of Stratfield Saye (home of the Duke of Wellington) to celebrate the Federation's 10th birthday. Further details expected in the New Year.

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## **ANSWER**

(see page 7).

5612 signal and telephone wires were destroyed in a fire that resulted in the closure of several of London's major (Souther Region) railway stations in August.

According to "The Standard" on August 19th, the wires destroyed included 20 signal cables each with 48 cores, 5 telephone cable circuits with 300 pairs of wires per circuit, and 7 micro-cables which served remote control equipment, each with 236 cores. The BT has not enquired as to the identity of the manufacturer(s) of the cables.

## 5-a-Side Soccer

### Results from the Second Half of the Season

#### A Team

V BICC B	1-0
V Mail Service (BBC)	0-2
V Police	1-2
V Marks and Spencers B	1-1
V CGG Sports	0-1
V CGG Athletic	1-1
V BICC B	0-1
V TV Sport (BBC)	0-3
V Club Costing	0-2
V Bush Rangers B	3-0 (Walk-over)

#### B Team

V Club Costing	0-3	Cup, 2nd Round
V BICC A	0-1	
V TV Sport (BBC)	0-0	
V Police	1-1	
V CGG Sports	1-0	
V CGG Athletic	1-1	
V Marks and Spencers B	0-3	
V Bush Rangers B	0-1	
V Buzbys	3-1	
V BICC A	1-0	
V CGG Sports	1-0	
V Marks and Spencers B	4-2	
V Club Costing	1-4	

As shown in the results list BICC B had a better second half of the season than the A team, which resulted in them finishing above the A team in the final league table. Both teams finished in the lower half of the table, however this was not too significant for there was little (apart from luck) to choose between most of the teams in the division.

In the second round of the Cup (the A team was knocked out in the first round) the B team were eliminated by Club Costing. Our players did, however, have some unkind things to say about the referee, a late stand-in whom impartial observers thought did a fine job in the circumstances. The same team (Club Costing) also spoiled the end of the season for our B side, defeating them 4-1 in the final game. This match was not as one-sided as the first, however; with just a little luck we would have avoided defeat. Honours were even in the A vs B team games. The 1-0 victory of the A team in the first match was noteworthy though, it was the first time that they had defeated the B side. The B side claimed they lost because they were still smarting from their

cup defeat the previous week.

The spirit shown by the B side in most of their games was exemplified in their contests with the Police, CGG Athletic and Marks and Spencers B. In their first match against Marks and Spencers they lost 3-0 in a disappointing game held after a three week lay-off in September. The second game at the end of the season was a different affair. Rather against the run of play the B side went 0-2 down early in the second half but fought back in the final 5 minutes. Following a goal of exceptional quality by John McGillivary they went on to totally demoralise the opposition and won 4-2. The only cloud to mar their victory was the fact that two men were booked, our first bookings since the League started. The draws (almost victories) against the Police and CGG Athletic were major achievements considering that the B side suffered heavy defeats against both teams earlier in the season.

The A teams' results were disappointing since our expectations for them were always high. They were considered, and on occasions were shown, to be a very good side indeed. Following their victory over the B side early in September and in the knowledge that B had defeated the BBC side Mail Service in a Cup game, and drawn against the Police, the A team went into their matches against these teams with confidence. Unfortunately they lost both games, but were not outplayed, just short on luck. Similarly, against Marks and Spencers B they had the best of the game and were rather unjustly denied victory.

In the final two months of the season, the A side was weakened by the loss of key players through work commitments and, in the case of their captain Steven Harrison, through injury. This undoubtedly upset their pattern of play and contributed to their lack of victories. Overall, the season can be judged a good one. We maintained our standing in the league with fine footballing performances and good sportsmanship (despite the B team's three bookings in their last two games). In addition, Mike Denton, our representative on the League Management Committee, gained universal respect for this competence as a referee (and as a player in our A team).

#### 1983 Team Squads:

- A. Dave Green, Ian Manning, Clive Carroll, Vince Allard, Mike Denton, Steven Harrison (capt.).
- B. Chris Kavanagh, Peter Walters, John Watson, Steven Bishopp, Peter Jennings, Derek Glockner (capt.), Terry Evans, Bob Price, John McGillivary, Lincoln Tingle also played for the B side early in the season.

#### LATE NEWS

Works Services have won the interdept. 5-a-side soccer competition .

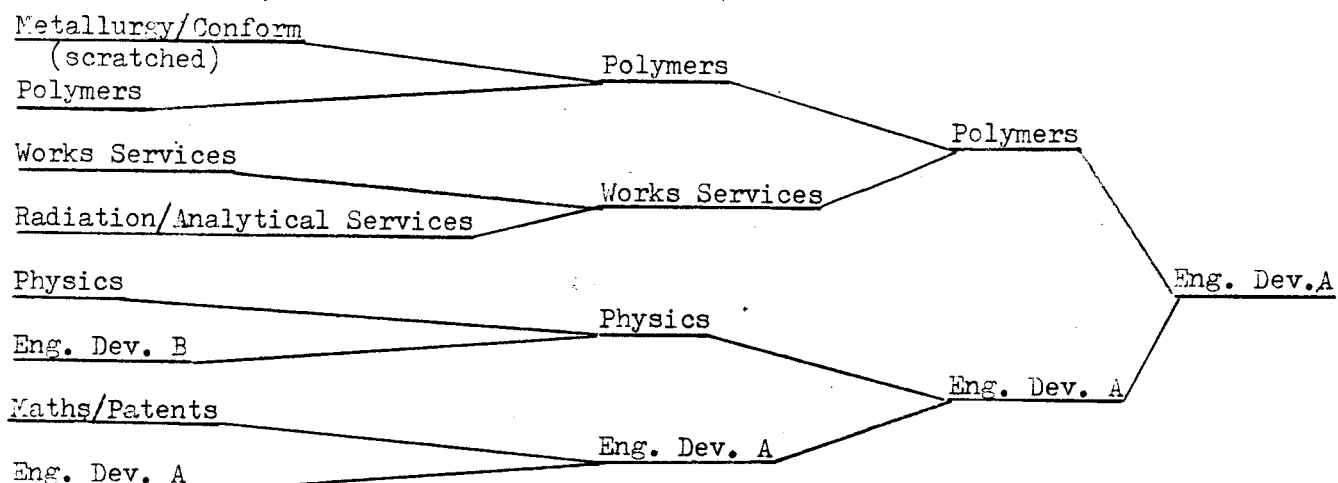
Now for a reminder of Summer:-

Interdept 6-a-side Cricket Competition

Venue : Wormwood Scrubs

Date : July 27th

The Draw and Results



For the first time in three years the annual 6-a-side competition was run on a knockout basis. This ensured that all matches were completed on one evening, a fine one fortunately, with Engineering Development A winning deservedly. In round 1, Polymers were assisted into round 2 by the late withdrawal of their long-standing rivals Metallurgy/Conform. In the other Group A match, Peter Mercer hit some fine shots (including a5) in Works Services innings of 24. This was in reply to Radiation/Analytical Services score of 20 for 2 wickets in their 5 over innings.

In Group B, Physics (14 for 2) had an easy win over a valiant Eng. Dev. B side (13 all out). To counterbalance this Eng. Dev. A (32 for 1 in 3 overs) defeated Patents/Maths (30 all out), whose side included Lincoln Tingle of Polymers as a guest.

In the semi-finals, Physics were not strong enough to hold Eng. Dev. A. Steven Harrison scored 15 and Clive Carroll 26 in the engineers' score of 57 for 2 in 5 overs. Physics could not match this scoring rate despite the elegant batting of Vic Banks (18) and Guy Secrett (14). They were 41 for 2 at the end of their innings.

Polymers had an easier task against Works Services, though they took until the final over of the match to secure victory. Works Services must have wondered what hit them (literally) in the first over of their innings. Greg Hawkes of Polymers took a wicket with his first ball, and two more before the end of the over without a run being hit. Jack Knipe and his partner stopped the rot, scoring 10 each in the remaining 4 overs to give a final score, including extras, of 32. For Polymers Mike Hagger, Greg Hawkes and a fine chap called Extras scored well to give them victory.

In the Final, Polymers scored 24 for 1 in 5 overs with Steve Bishopp knocking a fine 13 not out. All batsmen ran well between the wickets to mount the score in ones and twos. Eng. Dev. A's strong batting side took 4 of their allotted 5 overs to exceed Polymers score (their task being eased when the ball was lost for a time in the long grass behind the wicket such that 6 was credited to their score). Without doubt, however, Eng. Dev. A were very worthy winners on the evening and congratulations go to them and their captain Clive Carroll.

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Some scenes from our innings in the semi-final of the Hammersmith Knockout Cup . In the match, against Hammersmith and West London College, we were defeated ( enough said ) .





## SEA ANGLING SECTION

An overheard telephone conversation ,

" Hello Cliff , this is the secretary of the BICC Athletic and Social Club Sea Angling Section again . What's that , you don't take novice parties anymore ?

How's fishing been lately ? ...Good again yesterday , that's unusual ! Have the spurdog begun to show yet ? Well , they certainly are late , shouldn't they have arrived last March ? Our best spurdog catch was several years back but it also included several yards of electric cable .... No , we were not fishing for other types of eel !

Plenty of whiting are being caught , that's good news . Our catch this year has only been moderate , not as notable as the time when Derek caught a near six pound specimen - should have been a record , just like that 17 $\frac{1}{2}$  or was it 18 $\frac{1}{2}$ lb pollock taken by the club in May this year . Pity the Marina weighing station had closed early that day , the fish was even taken to Brighton railway station but it still couldn't be weighed in .

Remember, back in the summer, the time when a blue shark , or was it a great white, was seen to attack a cod which Lee was boating ? We have it on good authority that the same angler has been approached by the producer of "Jaws 3" for advice .

Adrian , yes he's the gent with the natty green one-piece suit , he keeps mentioning the crabs he caught on your boat ...should have been lobsters ! Reminds me of the time the club caught a boatful . Last September , whilst you were on holiday (a short cruise was it?) we went out with another wrecking skipper ..... You know the fellow , the one who untangles his clients tangles with his sea-boots ...and finally got among the congers .There were cries of jubilation from our conger catching specialists , even when one was heard to say , "I'm going to enjoy this ...slowly" , and indeed it was slow , only a handful were caught all day ! Two of the club went to the British Conger Club Championships again this year but our defending British Champion (Derek) couldn't quite retain his prize .

... A booking before Christmas ? Well , I'm told by members that they can't quite manage a trip just yet . They all claim to be busy sewing extra layers on their thermal underwear , perhaps the week after . Yes , before your prices go up , the club members expect to have finished their repairs by then and would like to wet a line ... " .

Chris Buchan

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## WANTED

Models to pose for a photographic evening to be held in the new year . ( No experience necessary ) .

Please contact Rob Corne ( ext. 340 ) , Ian Fordham ( ext. 337 ) or Gene Nalon ( ext. 249 ) .



# CHRISTIAN FELLOWSHIP

The Wood Lane Christian Fellowship is now two years old. During this time the membership has increased slowly but gratifyingly even allowing for the loss of a couple of members due to retirement. We have continued to meet each alternate Wednesday lunchtime in the small conference room and we have had a varied menu of subjects to consider. Several of the members have introduced topics for discussion, we have had a number of taped talks and sermons, and we held a Christmas carol 'sing-in' to recorded organ accompaniment at the end of last year. A highlight of the year has been visits from the Rev. E. Roy Putnam, a Methodist Industrial Chaplain who formerly worked at the Vauxhall factory at Luton before he was ordained, and the Rev John Hussey from the Methodist/URC Church in Acton, who was employed in retail trading before he went into the ministry. We are looking forward to continuing our Christian witness on the Wood Lane site during 1984, and extend a warm invitation to anyone who would like to meet with us at any time. In addition we say 'Thank you' to the Wood Lane management for allowing us the use of the conference room for our meetings.

Les. Ireland  
(Ext. 288).

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## MISSION TO AFRICA

Andrew Bunn, a member of the Wood Lane Christian Fellowship, spent part of last summer in Africa. The following is his story of that time.

This summer I flew to Upper Volta, meeting up with a group of twenty people who had driven out from South Wales in an old four-wheel drive Bedford lorry named Ebenezer. The name proved appropriate, for the worst things that happened to the lorry were two punctured tyres, and to us some minor discomforts, none of which caused any serious problems. I spent four weeks with the group, returning with them by land, our route is shown in the accompanying map.

Amongst other things, the expedition delivered gifts of money and medical equipment to two Christian hospitals, one in Niger, the other in Ivory Coast. The expedition concentrated on Mali and (to a lesser extent) Upper Volta, so the remainder of this article will be concerned with these countries.

Both Mali and Upper Volta include part of the southern edge of the Sahara Desert, they are very poor countries. Upper Volta is probably the poorer of the two, its inhabitable area is decreasing at a significant rate as the desert advances southwards. By some estimates, Upper Volta is the poorest country in the world, its gross national product per head being less than \$200 (USA), compared with much more than \$3000 for the U.K..

The climate in this part of Africa can be divided into three seasons :-

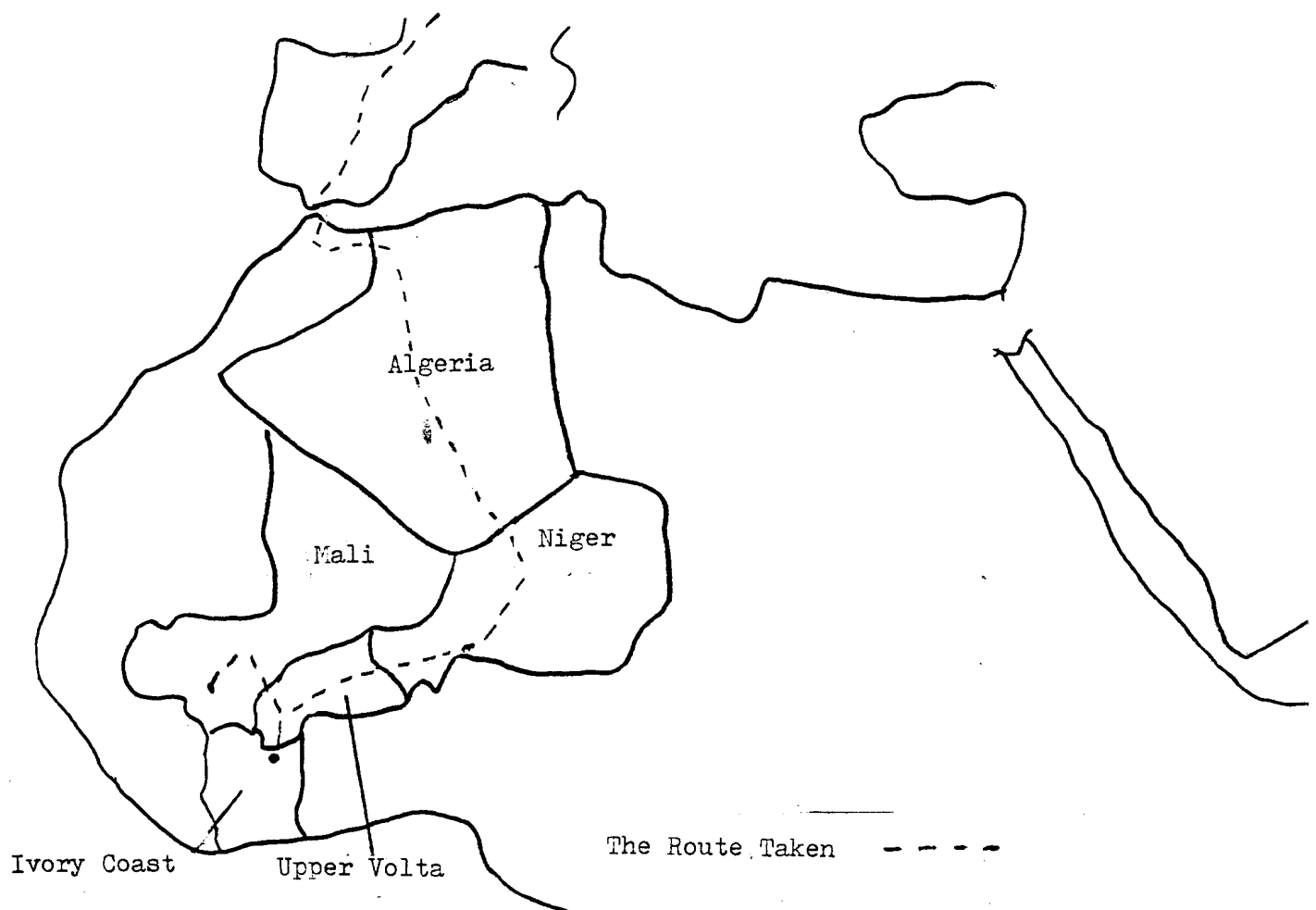
- (1) Rainy season, from June to September, with average daily temperature about 77°F.
- (2) Cool dry season, from October to February, with average daily temperature about 77°F.
- (3) Hot dry season, from March to June, with average daily temperature about 95°F.

Over 85% of the population live in rural areas, mostly in mud hut villages . There is little industry of any significance, subsistence farming being the majority occupation . Education proceeds along French lines ( both countries are former French colonies ) . It is estimated that only about 25% of the children in a given generation receive any sort of formal education , of these only about 10% go beyond the equivalent of our junior school level . This accounts for the very low literacy level of between 5 and 10% , though it is important not to equate literacy with intelligence automatically . Most of the population can speak two languages fluently , many are fluent in three languages .

Currently there is much debate , for example , The Brandt Report , about what the comparatively wealthy Western countries should be doing to help the poor Third World countries . Whatever the outcome of these debates , the problem of how effectively to help and strengthen these countries remains . Most Third World countries have been left behind by the advances in industrial technology , the majority of the population having insufficient technical education to cope with the advances of the industrial revolutions of the 18<sup>th</sup> and 19<sup>th</sup> centuries , let alone those of the present . Many who work at BREL are familiar with the difficulties involved in developing computer equipment that is serviceable and usable in our own factories , largely because of an 'education gap' , just imagine how much wider is the 'gap' between Western industrial countries , such as Britain , and Third World agricultural countries such as Upper Volta .

As a Christian , I believe that more serious than the material problems in this part of Africa is the fact that many people (an estimated 50% of the population in Mali) have never heard the words of Jesus . "Except a man be born again , he cannot see the Kingdom of God".(John 3v31).

Andrew Bunn



# TECHNICAL SOCIETY

Two meetings of the re-formed Technical Society have been held , both attracting large audiences .

At the first meeting , Guy de Hollain, head of the Radiation Department , gave a talk entitled "Electron Beam Irradiation of Polymers". With the aid of a video film and many slides , Guy described in detail the equipment used for electron beam irradiation of polymers , the effects produced and the applicability of the process to industry, with particular reference to the wire and cable industry .

Despite suffering from a heavy cold , Roger Marshall , from Bloomsbury St. , gave the second talk . Entitled "CATV" , his talk was a detailed guide to the field . He described the 3 main segments of CATV - head end , network and subscriber terminal equipment . The possibilities for CATV in the UK were enthusiastically described , with reference being made to recent Government proposals. One point Mr Marshall emphasised was that CATV is not simply a system for getting 'alternative' TV programmes into the home , it has the potential to provide another telecommunications system for the country .

Both of the talks attracted many questions , such that the meetings extended well into the lunch hour . This resulted in a problem , which might have been expected (with the benefit of hindsight). The continuous exodus of people to lunch and to other appointments caused some disruption to the discussion after the talk , particularly the second one . In future it would be preferable , and fairer to speakers , that anyone unable to wait until the end of the meeting should leave at the end of the talk , rather than during the discussion period following it .

The next meeting of the Technical Society is planned for January 26th 1984 when Mr. Salkeld of the BBC will talk on the BBC Microcomputer Project.



'What sort of budget are we working to on this project, Professor?'



But you've got to perfect it . . . we've already accepted five thousand orders!"

# PUZZLE PAGE

Here are a couple of puzzles to keep you busy during the festive season. There will be a cash prize for the first of these ( Generation Gap ). Send your answers to Peter Walters by Monday , January 9<sup>th</sup>, the correct ones will then be placed in the Editor's hat . The first one drawn out will be awarded the prize . Answers to both puzzles will appear in the next issue of the BT .

## The Generation Gap

The distinguished Baines family has a living male member in five consecutive generations. The most gifted member of the family, Benjamin, made the following comments which the rest of the Baines family found were indeed true.

Benjamin began:

"If Frederick's great-grandfather's age is divided by Frederick's own age, it gives a whole even number which if doubled gives Daniel's grandson's age. Edward's father's age and his own have the same last digit. My great-grandfather's age is an exact multiple of my own, and if one year is taken away from that multiple it gives the age of my son. Adam's age divided by that of his grandson gives an even whole figure which when doubled is Adam's son's age reversed. Furthermore this figure is less than his grandfather's age." Assuming that all fathers were eighteen or over when their children were born and that the eldest of the family is not yet a hundred years old, give the ages of the five named people.

## WHO OWNS THE ZEBRA?

This brain-teaser can be solved by combining deduction, analysis and sheer persistence. The essential facts are as follows:

1. There are 5 houses, each with a front door of a different colour, and inhabited by men of different nationalities, with different pets and drinks. Each man smokes a different kind of pipe tobacco.
2. The Englishman lives in the house with the red door.
3. The Spaniard owns the dog.
4. Coffee is drunk in the house with the green door.
5. The Ukrainian drinks tea.
6. The house with the green door is immediately to the right (your right) of the house with the ivory door.
7. The Medium Cut smoker owns snails.
8. Spun Cut is smoked in the house with the yellow door.
9. Milk is drunk in the middle house.
10. The Norwegian lives in the first house on the left.
11. The man who smokes mixture lives in the house next to the man with the fox.
12. Spun Cut is smoked in the house next to the house where the horse is kept.
13. The Flake smoker drinks orange juice.
14. The Japanese smokes Rough Cut.
15. The Norwegian lives next to the house with the blue door.

Now, who drinks water and who own the zebra?

# LEADERGRAM

Solve some of the crossword-style clues and enter your answers in the appropriate places in the panel opposite. Then transfer the individual letters, as you go, to the square below; according to the numbers. Soon you will find that you can see what the other letters in an incomplete word below must be, in which case these letters can be transferred back to the panel, helping to solve further clues, rather like the "across" and "down" in an ordinary crossword.

When complete, the first column of letters in the panel will form the name of an author and the title of one of his works, while the square below will contain a passage from that work. (No punctuation, the words being separated by black squares only, some words running from one line to the next).

Note that as there are 27 letters in the author's name plus the title, there are 27 clues. So the last one is lettered A'. Be careful not to confuse the letters from your answer with those from clue A, when transferring them to the square, or back.

1 K		2 P	3 H	4 R	5 N	6 L		7 R	8 I	9 G	10 A	11 S	12 Z		13 F	14 I	15 A
16 J	17 Y	18 N	19 M	20 T	21 O		22 A	23 U	24 V	25 Y		26 Y		27 Q	28 A'	29 X	
30 N	31 W	32 B	33 A		34 I	35 D	36 H		37 I	38 K	39 W	40 C		41 E	42 Q	43 W	
44 A	45 I	46 N	47 Y	48 L		49 J	50 N		51 U	52 O	53 T		54 M	55 G	56 H	57 V	58 S
59 D		60 C	61 N	62 Q		63 R	64 E	65 F	66 G	67 O	68 T	69 X	70 A	71 P		72 V	73 L
74 E	75 D	76 C	77 J	78 G	79 Z	80 K		81 C	82 G	83 H	84 X		85 C	86 G	87 D	88 W	89 A
90 A'	91 N	92 Y		93 D	94 G	95 M	96 R		97 W		98 I	99 Y	100 A'		101 L	102 U	103 S
104 G	105 M	106 H	107 B		108 G	109 A	110 N	111 V		112 E	113 J	114 A'		115 A	116 C	117 N	118 X
	119 Y	120 G	121 P	122 X	123 F	124 I	125 Z		126 B	127 A	128 J	129 C	130 I		131 E	132 F	133 P
134 S	135 K	136 I		137 A	138 I		139 Y	140 E	141 N		142 D	143 W	144 Y		145 U		146 T
147 L	148 U	149 V	150 H	151 E	152 W	153 N		154 S	155 B	156 T	157 F		158 X		159 I	160 F	161 E
162 U	163 A'	164 W		165 N	166 S	167 G	168 B	169 M	170 Y	171 Q	172 T	173 Z		174 J	175 V		176 W
177 N	178 C		179 G	180 D	181 Y	182 K		183 L	184 M		185 U	186 L	187 I		188 R	189 O	190 Z
191 D	192 M	193 C		194 D	195 C	196 U	197 A	198 T	199 E		200 E	201 F		202 H	203 N	204 B	205 I
206 G	207 L	208 Y		209 S	210 Y		211 C	212 I	213 R	214 Z	215 H	216 U	217 G	218 L		219 R	220 I
221 C	222 T		223 P	224 U		225 T	226 C	227 A	228 Z	229 U	230 O		231 W	232 M	233 A'	234 X	
235 D	236 E		237 Q	238 X	239 C		240 V	241 G	242 E	243 A	244 H		245 B	246 C	247 U	248 H	
249 H	250 R		251 K	252 Q	253 D	254 V											



# LOOKS FAMILIAR

The following quiz does not measure your intelligence , your fluency with words and certainly not your mathematical ability . It may , however , give you some gauge of your mental flexibility and creativity . It may be that you will not get all of the answers at your first attempt , but do not despair , this was the experience of many people who attempted the prototype quiz supplied by Mike Hagger .

INSTRUCTIONS :- Each question , below , contains the initial of the words that will make it correct . Find the missing words .

Example :- 16 = 0 in the P , answer :- Ounces in the Pound  
Some of the questions are topical !

- |                                  |   |
|----------------------------------|---|
| 1. 26 = L of the A               | 13. 7 = D in S W                          |
| 2. -273 = A Z in D C .           | 14. 3 = S I S a S on C D                  |
| 3. 4+20 = B B in a P             | 15. 1 = P in a P T                        |
| 4. 5 = D in a Z C                | 16. 12 = D of C                           |
| 5. 88 = P K                      | 17. 7 = P of W                            |
| 6. 8 = N in the T S              | 18. 40 = T with A-B                       |
| 7. 6 = S of a P                  | 19. 13 = B D                              |
| 8. 1 = L of a C P in C           | 20. 39 = S (N by J B)                     |
| 9. 240 = P(d) in a P             | 21. 15 = I of M                           |
| 10. 60 = P(d) in a F S P (C)     | 22. 10 = N of C                           |
| 11. 3 = K of O A                 | 23. 3 = M in a B                          |
| 12. 1 = D of W at 4 D C (S I U ) | 24. 10 <sup>+</sup> = M of the G.C D of Y |

One set of answers will appear in the next BT , good luck !

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## DOES IT ADD UP ?

Denis Groombridge has provided the following problem for your amusement :-

$$\begin{array}{r}
 B D E C D \\
 + A I E D B \\
 + D D G A A \\
 \hline
 I A J H F
 \end{array}$$

The solution will be included in the next issue of the BT .

# CHRISTMAS

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