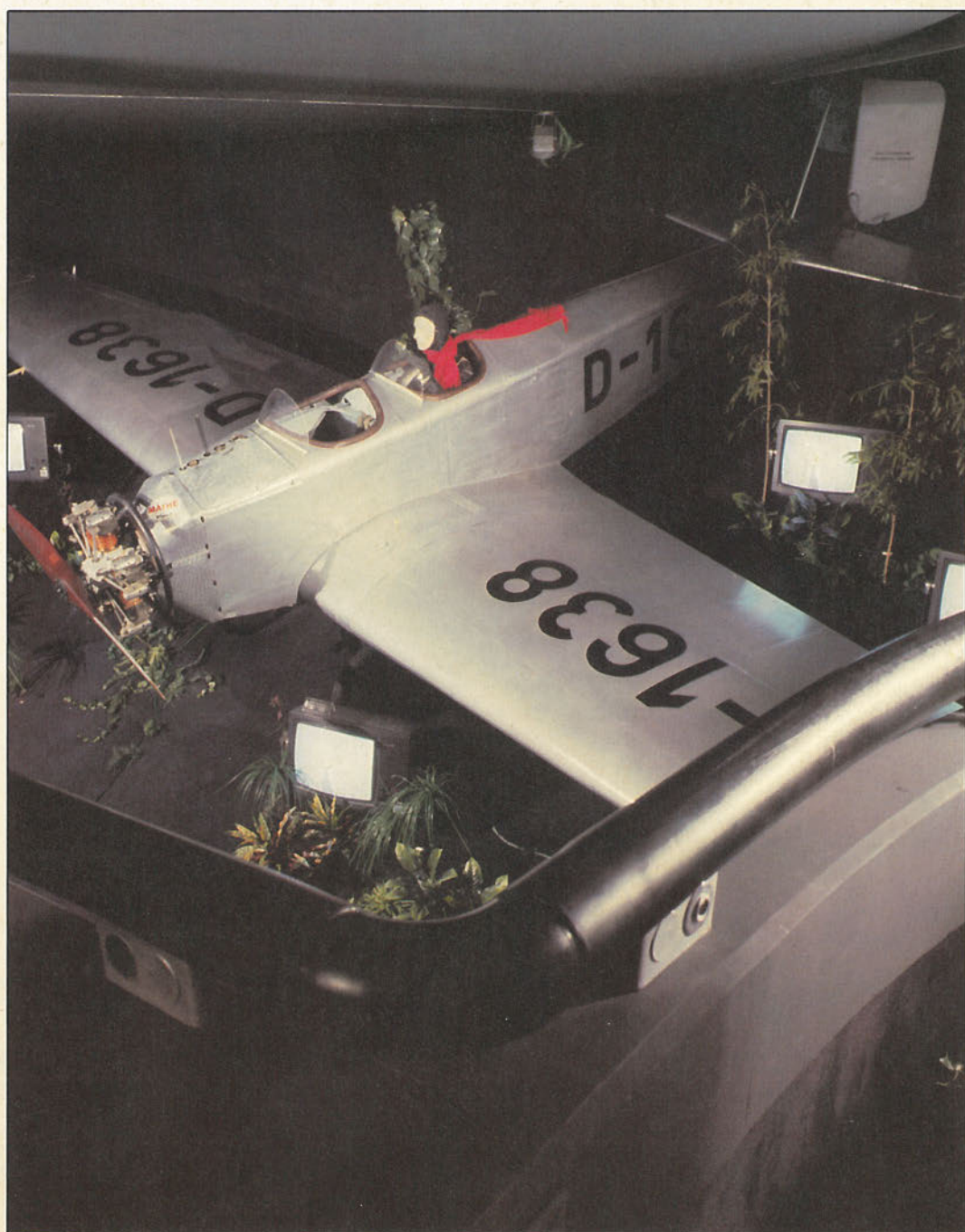


TABS

THE INFORMATIVE JOURNAL OF THE RANK STRAND GROUP



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TABS



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Cover: One of the exhibits in the BMW Museum, Munich featured on pages 14 & 15.



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Correspondence and articles for publication should be addressed to the Editor.

It now seems like a year ago when we re-launched TABS although it was actually only in December. We have begun to learn already from the response to the first issue of our re-born journal. We finally sent out, when all requests were in, just over twelve thousand copies of which nearly 60% went overseas. The circulation of TABS must mean that we have enjoyed, however momentarily, the attention of about twenty or thirty thousand readers around the world all of whom by definition must share an interest in the technology of entertainment. For this reason we have decided to widen the scope of TABS to cover developments in stage, studio and auditorium equipment as well as in lighting.

We received many letters, most of them so kind and welcoming that I would blush to print any of them. However, a few people felt we had squashed too much matter into the number of pages we could afford. In this issue we have thus tried to 'open out' the layout to make TABS a little easier to read. One of the mildly complaining readers was kind enough to say at the end of the letter in which he chastised us gently over the size of the type selected, "But I should perhaps tell you that I recently celebrated my eighty-sixth birthday." Well, Sir, I hope you find this issue a



FROM THE EDITOR

WE WIDEN THE SCOPE OF TABS

little more easy to follow. We do listen to criticisms, and where possible, try to make improvements.

We are certainly not intending to cut back our lighting content, merely to add extra material within the field of hoists, lifts, pantographs, float-on-air auditorium seating, projectors and cake stands. Cake stands? Yes, gentle reader, there is actually a dual meaning here. A cake stand can of course be an Edwardian device of three or more dishes, vertically separated by silver columns on which

madeines and eclairs can be circulated among tea time guests — or it can be a six foot high tower carrying circular horizontal steel plates of about four feet diameter, on which lie long playing spools of 35mm film which unreel from the centre of the spool, while respooling onto the outer circumference, thus allowing continuous projection in a cinema without the chore of rewinding.

The first alternative is available on hire from J.M.B. — see our article in this issue, while the second is available from our cinema equipment department — detailed article next issue.

This reminds me of one of those verbal exchanges which occasionally illumine our drudgery at Brentford. I should explain that we are agents for the very excellent professional projectors, lamphouses, cake stands etc. made by the long established Milan based company, Cinemeccanica. I was introduced a few years ago to their highly knowledgeable travelling expert, a Signor Vittore Nicceli. The colleague who performed the introduction said "Vittore, this is our Richard Harris, who has a tremendous interest in cinemas and their equipment from the late 20's and early 30's." Replied the Gucci booted Signor Nicceli "Oh, is O.K.! Many crazy peoples in Italy too!" Ah well.

McNAUGHTON'S RULES



The 'Old' Pitlochry Festival Theatre

In English legal parlance, these are the rules which govern the admissibility of an insanity defence in a murder trial. They are named after a Mr McNaughton, who before the days of press photographs, waited outside the House of Commons to shoot the Prime Minister, but in error shot the Chancellor of the Exchequer! As a Brentford employee all this is obviously information that I felt I might need. The point for TABS is that McNaughtons is also the name of a famous quality shop in Pitlochry in the heart of Scotland's Highlands, which specialises in kilts, sporrans, tartan rugs and such. It was in McNaughtons some years ago that I laid my plaid deerstalker on the counter while selecting a scarf. I bought the scarf but forgot the hat. Returning ten minutes later to retrieve it, I found that not only had it

vanished towards the stock room, but I was told that it would have been sold to a "a Birmingham Gentleman", except that when he tried it on it turned out to be of an unusually large size!

Pitlochry now has a superb new theatre, see our article on page 16. This beautiful building, containing among its other delights, Duet No.220, has now grown from a gleam in Kenneth Ireland's eye, via the midwifery of that doyen of theatre consultants, John Wyckham, to be the handsome child of architect Graham Law. These latter two gentlemen are in fact the leaders of the team who gave us that other superb modern theatre, the Eden Court in Inverness, also, quite naturally lit by — no, modesty forbids!

SHOULD HANGING BE BROUGHT BACK?

Older readers will remember the drama brought into the lives of the majority by the suspension at a rope's end of a very small minority. The demonstrations outside the prison gate — Mrs van de Elst, the anti hanging campaigner, having her Rolls Royce pushed respectfully away by the bobbies while addressing the crowd through a megaphone. The jokes during the next few weeks. Example: "What is Manuel doing for his holidays?" "Oh, just hanging around Barlinnie Gaol."

Of course, hanging in the TABS context means hanging lanterns or scenery on a stage or in a studio. The Telestage Self Climbing Hoist is a uniquely useful, and economical, piece of equipment which we feel deserves consideration by a wider market than large and knowledgeable organisations such as the BBC, who use it already. Hence our special illustrated article in this issue.

WHAT'S THE MATTER WITH GLASGOW?

As the old song says, "it is going round and round."

Well, I am glad to say that Strand's presence in that noble City is now stable and our Regional Manager Arthur Rowley and his able amenuensis Elsbeth Stevenson can be found at 15 Lynedoch Street, Glasgow G3 6EF, Telephone: 041-332 1548 where they are anxious to assist customers with Strand equipment, Cinemoid, lamps, and Strandparts. A large grey metal cupboard full of the latter is poised and ready to assist people who are determined to break their lanterns and controls!



"THE IMPORTANCE OF BEING ERNEST"

Our photo shows the first floor lodgings, where, during eight weeks one nineties summer, that well-known Sodom & Begorah dramatist, the late Mr Oscar Wilde, stayed with Bosie, and wrote the best light comedy in the English language. The building is situated on Marine Parade, Worthing, which town, of course, comes into

the play as the hero's name. Not, perhaps, very widely known is that the play originally had a fourth act, and there was a scene in which Algernon Moncrief is arrested for debt. When told by the Bailiff, who I am sorry to say was called Harris, that he would have to go to Wormwood Scrubbs unless he settled his Cafe Royal bill, Algy says "It is really too bad to be sent to prison in the suburbs for dining in the West End."

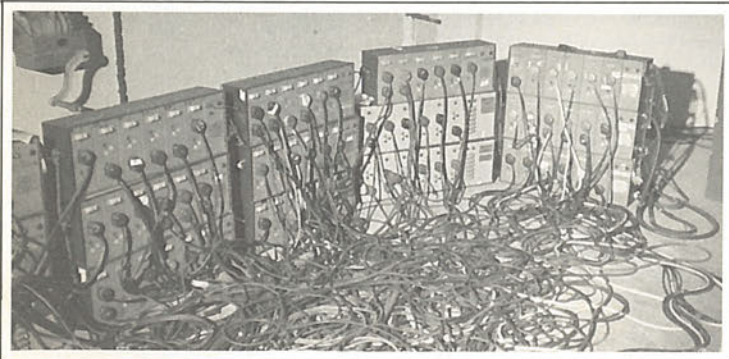
I took the picture while in Worthing recently in connection with the very large contract we are carrying out at the Worthing Pavilion, which will be described in a future issue.

STRAND AND VEHICLE LIGHTING

You will find that one of our 'non show biz' articles in this issue covers our lighting involvement in the fabulous new BMW museum at Munich. When this article came in from Heinz Fritz, the Manager of our German Company, a folder giving a photographic history of BMW was enclosed. There were obviously quite a few references to the company's involvement in the unpleasantness of forty years ago, with pictures of army motor bikes and sidecars etc. This reminded me of a super Sunday morning encounter recently in Egham High Street. Two war time military specification Volkswagens were drawn up by the kerb. They were in khaki paint, bearing Wehrmacht divisional and regimental insignia,

while their crews, in 'Feldgrau', with proper helmets etc. were quietly enjoying a cup of tea and a bun in a nearby cafe. When they emerged — naturally they were all typical mad Englishmen — I complimented the driver of one of the vehicles on his restoration. He had discovered his pride and joy deep in provincial France, and lovingly restored it. It was complete, even to German Army maps of the Ukraine in the pocket. I noticed a large German flag neatly folded in another pocket and enquired if this was flown at parades, or what? "Oh No" replied the enthusiast, "It is spread on the bonnet to identify us should a Luftwaffe plane fly over."

NOT A SNAKE PIT No.2



Our last issue's photo which we captioned as "The Snake Pit", showing what we considered to be one of the most confused bits of cabling we had seen, brought forth this excellent response from reader Barry Ball who currently adorns the Fleet Air Arm at Culross in Cornwall.

One of his very serious interests is obviously, from his accompanying letter, stage lighting. His home address is in Leeds, but he firmly says the site of the picture is neither Leeds nor Cornwall. Anyway, this issue's TABS prize consisting of a suitable bottle, is on its way to him.

OUR LIGHTING LECTURES

Who does not relish the role of expert? Well, many of my colleagues deservedly do. We quite often have the privilege of being invited to give practical demonstrations or slide presentations to amateur drama groups, theatre clubs or teacher training colleges, and we always enjoy ourselves. Herbert Hughes our Northern Manager, a man of great wisdom and knowledge, rendered entertaining by the added spice of a highly enthusiastic nature, has recently given with his colleague, Alan Buxton, a two days course on stage lighting in Hanley for producers

and technical members of local drama groups, which he describes on page 5.

A few weeks before, I had given an evening lecture to an association of South London drama groups, and recently Tubby Martin and two of his colleagues helped me with a half day course in Sutton.

If any readers can muster a group who are really interested, we are happy to put on a lecture or course for them, providing other commitments allow. I know many of our overseas agents undertake this type of thing constantly.

A LONG AUDITION, LOOK YOU

"The things we do for England" — even in Wales — or more properly, the things we do for Strand. We were invited, a few months ago, down to an hotel in the Newport area to provide the sound reinforcement and stage lighting for what must have been one of the longest auditions ever held. It lasted, even with each act nominally limited to fifteen minutes, from 2 p.m. on a Monday almost continuously to about midnight on the Tuesday. The idea was that artistes had the opportunity of showing their abilities to an ever changing audience of bookers and agents, who came, went, fell asleep and woke up as this marathon unwound. Our interest was to show our equipment to the same people. We provided a lantern rig, 765 follow spots and Tempus and Disco desks, as well as Strand Sound gear. There were impersonators, holiday camp 'Uncles', clowns, jugglers, singers and instrumentalists, plus a few versatile entrants who combined several of these talents and even offered them simultaneously. By about midnight on day one your Editor slipped into slumber, only to awaken to be told that the Fulcrum Brothers had been throwing Mitzy about! Anyway, the lighting and sound were impeccable. The entertainment itself? Well, Bryan Forbes once told us how to get out of the embarrassment of meeting a playwright friend when leaving a theatre after witnessing the first night of an obvious disaster. You approach the friend fearlessly, clap him on the back, and say "Well, what about that, then!"



JOE THORNLEY JOINS STRAND

We are particularly pleased that Joe Thornley, former Marketing Manager of Berkey Colotran, has decided to throw in his lot with us. Joe is, of course, a very well-known and respected member of the theatre and television equipment world. After an apprenticeship served as an electrical engineer, being mainly involved in electrical installations followed by military service with R.E.M.E. in North Africa he returned to civy street with the Glacier Metal Company, working originally on maintenance, but later on circuit design for automatic machinery. In 1960 our hero found his true field of endeavour with the Mole Richardson company as a design and development engineer. Thus Joe Thornley and the world of Show Business came together. In 1967 Berkey Colotran acquired the Mole Richardson Lighting Division, and Joe transferred as one of the more valuable parts of the package.

He continued to work on luminaire design and development, as well as on suspensions, pantographs and monopoles, with a few side excursions into dimmers and controls.

We at Strand obviously feel that at last Joe has come to his true destiny, now that he, as a leading industry figure, has joined the industry's leading company.

NORTHERN LIGHT'S NEW HOME

Strand's main dealer in Scotland, Northern Light, have moved from their former home, the old porridge oats factory on the Western fringe of Edinburgh, to beyond the Eastern fringe. Actually they have settled in Leith, at Nos.39-41 Assembly Street. Johnathan Allen looks after matters in Leith, while Mike Smyth continues to hold Northern Light's Glasgow outpost.



Ivan Myles and Russell Dunsire of Strand Lighting. Ivan looks suspiciously alert. Russell has apparently had nearly enough.



ABTT TRADE SHOW

We are looking forward to meeting readers on our stand at the Round House, London NW1 on September 23rd, 24th, 25th & 26th.



BEWARE

This notice may be seen outside one of the Strand Group's factories, but remember, customers we are always pleased to see.

PALACE REVOLUTION



FEW theatres can have opened in such a blaze of publicity as the re-built Palace Theatre, Manchester. The choice of "Jesus Christ Superstar" was an inspired one for the whole project had an overwhelming sense of a miracle being achieved and hosannas were echoed loud and wide, even on the ITN news.

It is the last of the big lyric theatres in the city and now has not only the largest stage outside London, but one of the best in Europe. The re-launch was just before the building's 90th birthday and there could have been no better birthday present for Manchester and the North West.

For the majority of its history, the Palace has concentrated on the big names that have brought in the audiences and for many years this was dominated by variety and pantomime. Every major star of the Music Hall appeared there including Marie Lloyd, Vesta Tilley and Harry Lauder. As the Manchester Palace of Varieties, it knew which corner of the market it was catering for. There was a constant parade of the most glamorous performers during its heyday. American visitors included Judy Garland, Frank Sinatra, Danny Kaye, Laurel and Hardy and Liberace. English stars like Gracie Fields and Vera Lynn appeared at the Palace in the early years of their careers. The theatre was able to counter the attractions of radio and television by its glittering productions, that are remembered well even today. During the fifties and sixties the theatre staged every possible type of production — from Hamlet to Guys and Dolls. There was a string of musicals getting their provincial try outs before the West End, including "Pickwick" and "Stop the World" which went on to Broadway. There were successes like "Maggie May", and flops like "Twang".

It must be said though that the Palace was quietly decaying throughout the sixties and was never as aesthetically pleasing as its classically structured rival, the Opera House which attracted most of the

more refined dramatic and lyric touring productions. The Palace looked lavatorial in its external appearance and was becoming frayed around the edges.

Audiences were dwindling for the live theatres and although the Palace did put on visitors like the Ballet Rambert, new plays like "Forty Years On", and some memorable pop concerts in the early sixties with groups like the Rolling Stones, there were inferior shows. A mixture of Amateur operatic groups, scout Gang Shows and revivals cannot keep a theatre open.

When it was announced that both the Palace and the Opera House would close during the mid Seventies, Manchester theatre-goers fully expected that the Palace would remain dark.

However, when the Arts Council consulted technical experts from the national touring companies, it was the Palace that they decided to try to save. Thanks to the intervention of a local construction firm, the building was acquired for £150,000. The chairman of the company and of the new owners, the Palace Theatre Trust, is Raymond Slater, who is the very model of a millionaire arts fancier. The project was to be a unique mixture of commercial, private and state funding and the expertise was from both the commercial and artistic backgrounds.

From the original plans the whole scheme blossomed out and the estimated costs escalated as ambitions grew, to the final cost of £3.25 millions. Not being content with just re-decorating the theatre, the new owners tackled the job with complete enthusiasm and imagination. A whole street of adjacent buildings was acquired to allow the building to be extended. With the demolition of the theatre's back wall (it was 13 feet thick and the job was done by hand), the extra space means that the stage can now accommodate any production, that touring companies can offer.

The statistics of the operation are staggering; the stage area itself has been doubled in area from 3,000 to



by Alan Jowett

Alan Jowett is a freelance consultant and writer who has contributed to arts and entertainment magazines in both Britain and the USA. He has taught drama in secondary schools, worked for an arts association and performed on stage in clubs and theatres reading his own verse.

6,000 square feet and raised by one foot. The roof above the stage is now twelve feet higher. The orchestra pit can seat 110 musicians, enough for any show. Performers have a new six storey block with rehearsal rooms and dressing rooms for 150.

The auditorium has been carefully restored and the Victorian purple and gilt plush seating re-covered by the Rank Strand Seating company based at nearby Ashton-in-Makerfield. Every ornamental decoration has been retouched. Even the Royal Box has been re-converted to its original style.

Lighting is now controlled from a specially built room at the back of the stalls. The centrepiece is Rank Strand's new Light Palette which controls 300 lighting circuits. Rank Strand have also supplied the theatre's lanterns including T84's, 808's and Pani HMI Follow-spots.

The sound is said to be up to broadcasting studio standards although it seemed a little dry to some ears during the first week.

The opening was splashed throughout the media, but the theatre will now settle down to its task of providing live entertainment for 50 weeks a year — twenty weeks of cultural extravaganzas from the Covent Garden companies who will now have regular seasons in Manchester and thirty weeks of popular musical events including jazz and rock concerts.

Those who saw the construction in progress wondered whether the job could be done and order restored; but anyone who has seen the completed auditorium has to agree that it is now truly palatial. It is better equipped than many London theatres and this is the crux of the re-launch. It is not sufficient to regard the provinces as being satisfied with provincial standards. The theatre has to fill its 2,000 seats every night and the management know that despite the recession, if the people are offered the best it can only succeed.

EDITOR'S NOTE:

The architects for the re-furbishment of The Palace were Smith & Way, Architects & Planning Consultants, 65 Barton Arcade, Manchester 3. The theatre consultants were John Wyckham Associates, 119/121 High Street, Epsom, Surrey.

TEMPUS RED IS THIS SPRING'S COLOUR



SUSAN is seen here modelling our latest creation, Tempus covers in quilted red fabric, faced with waterproof shiny bright red P.V.C., with contrasting black stitching.

Intended for those knock about occasions when the company may be rough, and the liquid may be excessive. No fashion conscious dimmers or desks would be seen without them, outside their usual theatre, or hire stores.

May be purchased at all the usual Strand Boutiques.



IS BIGGER BETTER?



I suppose if we are comparing a magnum of Cordon Rouge with a quarter pint bottle of the same the answer must be "Yes". The difficulty with a television set is that one's opinion must be coloured by one's view of the material on offer. Now, let us be clear. I am certainly not one of those people who are anti T.V. I do not follow the Peer of the Realm who when asked in a wireless interview recently if he was going to watch one of his offspring competing as a show jumper said enthusiastically "Yes, rather, I am sure there is a set in Nanny's flat".

Now about Strand's new venture. Made for us by Toshiba, this is a 45 inch screen projection T.V. unit. When the first of these was delivered to Brentford just before Christmas I wandered up to the showroom one morning, firstly because BBC2 were showing James Hayter's Pickwick film, an old fifties favourite of mine. As a fall back position, if the technical standard was poor I could enjoy that favourite Editorial luxury, the after breakfast nap. Well I stayed awake. I would rate the new Strand projection T.V. as nearly as good as 16mm film visually and rather better aurally, optical 16mm sound always being a weak link. The screen is somewhat directional although bright enough to view in normal room lighting, but as the viewing angle is pretty well as wide as the limits of visual distortion, that is no problem. The whole thing is a real example of cunning oriental engineering. There are the usual three projection picture tubes each handling a separate colour. These tubes can be electronically manoeuvred to get perfect registration, a special grid pattern always being available for setting up, thus no need to await the nauseous goody child with balloons that normally serves this purpose.

I remember a couple of years ago, before projection T.V. systems were so familiar, seeing one on view in Macy's in New York, and what with the NTSC colour and 500 lines (or whatever it is) I mentally wrote the whole thing off. Well, I was wrong. Reader cherish this last sentence, you will not see its like from me very often.

The uses of this machine? Many and various. Not really for the home, as the picture is a bit overwhelming unless your parlour, living room or lounge is of ducal proportions. Also it costs £1,900 with V.A.T., so it's normal home will be a training centre, pub or club. One fascinating usage has come to my notice. I should explain to foreigners and southern Englishmen that the north of England has many virtues and

special interests. Most of its denizens are great gamblers, reliving in Todmorden or Spennymoor, so far as is possible to them, the expansive life style normally associated with people such as that superb man the Duke of Newcastle, known as "King Jog", because he opined that "A man could jog along perfectly well on seventy thousand a year." And this was in 1780!

A great part of this eighteenth century squirrel life style is the prediction of the order of arrival at the post of a group of horses, with a few pounds normally going to support one's opinion. All this will be unknown I suppose, in Austria or Zambia, but will not, I think, be a totally unfamiliar concept in Queensland.

One problem with the English climate is that the fog sometimes means a jockey can't see the icy patches, so racing has to be cancelled on about half the available days in winter.

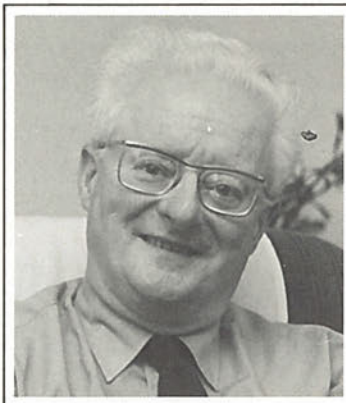
It is a tennet of free enterprise that a demand will always be met, so a clever company have produced a whole series of video tape cassettes of horse races — and here is the point — these are sealed so no one can find the winner before the tape is opened and shown. These races are then put on a video machine and wagers fly thick and fast, the result always being an unknown quantity until the leading nag passes the post. The system has been going for a few years, but how much more exciting to be parted from one's money in a 45 inch rather than a 22 inch format! The Strand unit can be linked with video recorders and can accept either PAL/SECAM or NTSC inputs, as well as normal UHF T.V. transmissions.

More information from either Victor Adams or Carole Brightly on 01-568 9222 Ext. 513. RMH

No, not Toulouse Lautrec's funeral! Our photo shows "The Rank Man in his Rancho". See text.



A LIGHTING COURSE AT HANLEY



by Herbert Hughes

Herbert Hughes is Rank Strand's Northern Regional Manager and is well known in theatre lighting circles throughout the north of England.

IN North Staffordshire, there is an area which has been immortalised by Arnold Bennett in his novels. It is known as the "Five Towns", and is the centre of the pottery industry.

In actuality, one of these "Five Towns" is Hanley, which can lay further claim to fame as being the birthplace of Reginald Mitchell, the

designer of that symbol of our wartime deliverance, the "Spitfire" aeroplane.

What could be more appropriate than to name a Theatre after him, and this is just what the good citizens of Hanley have done.

The Mitchell Memorial Theatre is part of the Youth Centre Complex of the same name. It is professionally run by the resident staff, under the auspices of Staffordshire County Council Education Committee Youth Advisory Service.

The theatre is well appointed, and on February 7th and 8th 1981 was the venue for a two day weekend course on "Theatre Lighting" which I conducted assisted by our Midlands Area Representative, Alan Buxton.

The course was attended by 51 people, drawn from differing facets of theatrical life. They came from 6th Form Colleges, Amateur Operatic and Dramatic Societies, Youth Drama Groups, School Drama Societies, all avid for expert and professional advice, many of them being quite inexperienced in the field of Theatre Lighting.

The content of the course included various types of lighting equipment and dimming controls, and how they would be used. Also included was the use of colour filters and the relationship of colour and sound in a lighting sense, incorporating a cameo transition scene from one evocative lighting state to another, using slide projection of storm clouds and forked lightning flashes, fleecy clouds and a crescent moon, to the accompaniment of part of Beethoven's Pastoral Symphony. A minor tour de force!

As the course progressed, a fund of anecdotal stories emerged, based upon the many years of involvement of we two gentlemen in the professional and amateur theatre scene.

Quite an amount of equipment was used during the course to demonstrate the techniques and knowhow, and it had to be set up beforehand, with a rehearsal, just like a bona-fide theatrical performance.

It was a great advantage to have a real "theatre" atmosphere and feeling, so that the people on the course were able to regard the proceedings as much a theatrical experience as an educational seminar.

The course was voted a complete success by the participants, and our thanks go to Mr Gwynn Harris, the Youth Advisory Officer, his lady assistants, and the theatre staff, for their first class organisation, help and co-operation in contributing to the successful presentation.

CHANNEL ISLANDS EXHIBITION AND LECTURE

Ivan Myles of Rank Strand, explains the workings of a Duet to interested visitors at an Exhibition recently given in The Opera House, Jersey by Strand agents for the Channel Islands, Commercial Electronics.



▲ In conjunction with the Exhibition Robert Ornb of Theatre Projects Services gave an instructive and highly entertaining lecture on the practise of lighting. Robert is seen in our photograph chatting afterwards with members of the Jersey Arts Council.

Strike that gong! Philip Bogod, General Manager of Strand Century caught by the editorial Pentax one bright morning.



FOR this portion of his TABS travels your Editor was off to see something of the work of Strand Century, our sister company in Canada. I decided to combine this trip with a visit to the U.S.I.T.T. annual exhibition, which this year was to be held in Cleveland. The U.S.I.T.T., which is a similar body to our own A.B.T.T., holds an annual conference at which technical papers on theatre technology are given and this is accompanied by a commercial exhibition of companies working in theatre technology. These gatherings are in a different American city each year. This has the advantage that members do not have to travel to the same spot every twelve months, but it has the disadvantage that the locations necessarily differ in their attraction. So far as Cleveland's attractions are concerned there are two differing opinions. I personally hold the other one.

Before going to Cleveland I spent a few days in New York — one of my favourite towns — and was able to take advantage of kind invitations by two of our competitors, T.T.I. of New Haven and Kliegl of Long Island City. It is not the role of TABS to comment on our competitors or their products so I will simply say that I was received with great friendliness and openness by Dennis Carnine at New Haven, and by Mr Kliegl and Dr Rubin at Long Island City. With some surprise I learned that all were TABS readers!

New Haven, my first visit, is about an hour and a half's train trip from Grand Central, most of the way through a nineteenth century industrial landscape, rather like our own West Riding or the southern part of Lancashire. New Haven itself is the location of Yale University, most of whose buildings are uncannily like Oxford colleges. I was shown one very odd building, vaguely classical and without any windows. This apparently, is where members of a Yale secret society meet. The next day was to take me to visit Messrs Kliegl. They have their factory at Long Island City, which I imagined from its name to be a fairly remote aristocratic, or at least wealthy, spot. I looked forward to seeing the seaside houses of the Vanderbilts and the Goulds. My first suspicion of a different truth arose when I discovered it was near enough to E 48th St. to be "only a five dollar taxi ride across the Queensborough Bridge". Well, Long Island City fits its name about as well as Shepherd's Bush in London, or Spring Bank in Hull. How I wish, dear reader, I could print for you a transcript of our lunch time conversation. Many a consultant and many a theatre technician must have had glowing ears!

After this visit I just had time to catch the last conducted tour of the day of Radio City Music Hall. For such a man of the cinema of the thirties as I, you will realise that I approached this incredible monument to a noble but lost age at least metaphorically on my knees. The pilgrim approaching Mecca or the faithful approaching St. Peter's could hardly have been in a state of more enthusiastic anticipation. I was not disappointed. The sheer scale of the place: 6,200 seats on three levels, the incredible hydraulic stage lifts, like the bomber lifts on an aircraft carrier, the foyer, the lower lobby, the star animal dressing rooms, where the sheep and camels who have feature roles in the annual Christmas Show are accommodated, separately from the humbler goats who fulfil the animal crowd roles. All is marvellous and infinitely worth the \$3.90 and the two hours involved.

Only two of us were actually on this tour, an immaculately clad silver haired gentleman from Munich and your rather less immaculate Editor. I should explain that the tour took place the day after the assassination attempt on President Reagan. As our voyage of discovery neared its conclusion, the earnest young guide who was taking us round indicated a small first aid room somewhere in the lower levels equipped with stretchers and the odd white plastic bucket, "This is where the Para-medics were stationed, to treat anyone in the audience who needs help," said the guide. Upon which my hitherto silent companion asked, in perfect English and with all the suavity of evil old Europe, "Does the President of your country attend performances here often?"

Wednesday morning and off to La Guardia Airport en route for Cleveland. The usual rattling but apparently reliable Yellow Cab, mine, according to the driver, had clocked up 180,000 miles, into town to the convention hotel. The first thing to notice was that after a fresh and pleasant 60° in New York, Cleveland



The very busy Strand Century booth at the U.S.I.T.T. exhibition. The Lekos shine down on Mantrix and Mini Palette.

NEW WORLD

by The Editor

was about 78° with a fierce 30/40 mph hot wind.

The exhibition itself was very good, featuring about fifty companies covering stage equipment, costume, make-up etc. as well as lighting. Because it was held in a proper exhibition area, rather than a floored-in theatre, it all looked rather more professional than we in the A.B.T.T. can usually achieve. If we in Britain could get our act together and have our exhibition PLUS an international conference, properly organised with expert speakers and authoritative papers, we would attract overseas visitors and the effects would be firstly, a far greater income for the A.B.T.T., secondly opportunities for British theatre designers, consultants and technicians to work more often abroad as well as providing a fine shop window in the U.K. for British theatre equipment. Our typically English amateur approach is delightful, but isn't, in today's harder world, getting us all as far as it should.

To return to Cleveland, our photo shows the Strand Century exhibit, which featured the new Leko range which has proved so successful, plus Light Palette and Mini Palette. This latter fills the role in America that Duet fills in the rest of the world, i.e. the standard small memory system.

Strand Century also showed, for the first time, a new manual system, Mantrix, which is a multi pre-set board with among other desirable features, channel grouping, dipless cross fade and a pin patch to allow dimmers to be grouped to circuits. In the Mini Palette and Galaxy manner, it uses multi plexing, in this case only four control wires are needed for 96 dimmers, or 8 wires for up to 288 dimmers.

Mantrix was shown with the new and impressive Strand Century CD80 dimmer pack, which squeezes twelve 2.4 kW dimmers into a 23 inch x 20 inch x 8 inch package! Unfortunately, European phasing requirements appear to rule this out for us, but it is a very impressive piece of work.

Last year the show had a rash of 'plastic cash register' memory systems, one of which achieved its coloured V.D.U. display by the delightfully simple method of transmitting its cathode rays through

various permanently fixed pieces of colour filter material! Great ideas are often re-invented. I remember one system designed to bring colour TV to the masses back in the fifties which had a piece of shaded green filter along the bottom of the screen, where one would expect to find grass and a piece of shaded blue along the top for the sky!

In this year's show the main fashion seemed to be for electric power flying systems, which are all the rage now in the U.S.A. At the 'New Products' session, one manufacturer who displayed an impressive console to control the whole thing, stated that he did not expect to see any more manual flying systems installed! In the context of his remarks, I think he probably meant this to apply to professional, or at least large, auditoriums, but power flying is obviously going to become the standard in the not too far off future. Interested readers are referred to our article in this issue on the Telestage self-climbing hoist.

After a hard day around the exhibits, sustenance was called for and all the Strand and Century happy band decided to go out to a recommended Steak House. Cleveland is not a city for strolling about in at night so we rang up the restaurant to get directions to drive there. "O.K.," said the proprietor, "I'll send a van for you!" All sorts of comments such as: "What a town, they need a Brinks Truck to make sure they get customers in safe," to "Did you all see Sweeney Todd?"!

Safe home, and up to my bedroom to find that the lower window sash had actually been blown out of its frame and was lying on the Editorial bed! Down again to the lobby to lay the problem on the duty manager and another drink while repairs were made.

The next day, Saturday, up to Toronto on a midday flight. The temperature at Cleveland Hopkins Airport was 74°F. A forty-five minute flight along the length of Lake Erie brought us to Toronto's Malton Airport, where the temperature was 6°C! This time your Editor had a hired car which was fitted with the usual infuriating buzzers, one for not shutting the doors and one for not wearing a safety belt, etc. Having



Believe it or not, this is a Theatre! The indoor auditorium at the Canada Wonderland Theme Park.



Roy Foley, the Toronto based service expert on Strand memory systems. Note the MMS modules.

railway sleepers. Timber in North America is used very prodigally. I could build a good garden shed from what they throw away when building a small house.

There are two theatres in the Theme Park, one a kind of medieval music hall, the other an open air Greek Theatre, complete with acanthus leaved corinthian columns, with a multitude of 120 volt outlets along the propylaeum. I think it was Disraeli's wife who said she could never remember who came first, the Greeks or the Romans, but I think I am right on this theatre's antecedents.

The medieval theatre has over 200 Strand Century lanterns, plus battens and floods, all controlled by a Mini Palette. The inevitable patch panel is segregated in a kind of box just off stage, and quite right too.

The access for lantern focusing is literally the best I have ever seen. Steel walkways without a single cranium cracking pipe, and each one ideally positioned. The control is F.O.H., but only gainable after climbing a vertical steel ladder about 20 feet, which should ensure that the operator develops very long arms.

The whole park is being built to a high standard, with a fair bit of advanced technology employed. There is, for example, a large lake which will have a multiplicity of fountains, all lit by multi-coloured underwater floods, both lights and water jets micro-processor controlled so that they will beguile the eye with an everchanging pattern. Actually, white light on fountains always looks the best, but I feel my view, although most courteously received by our host, Bjarne Christensen, is unlikely to prevail.

The next day took me on a tour of CFTO, the flagship of the Canada wide CTV independent network. My guide was that leading figure in the Canadian chapter of the Society of Television Lighting Designers, Peter Edwards. It was all very different to the intensely used studios at, say, Shepherd's Bush. One enormous studio, for example, had a small crew lost in the centre where they were taping a food commercial. There were hundreds of old Strand scoops, plus quite a few Ianiro Iris units, which continue to be extravagantly praised, wherever they are used. This nowadays includes many theatres. I believe Glyndebourne, with their superb standards, were actually the first to use these ideally effective units theatrically.

One idea at CFTO which is not so often found is that the vision mixing is all done by a mixer for each studio, all gathered in the same room, not in the individual studio control rooms. I believe I have only seen this once before at Thames Television. One is reminded of an air traffic controller's set-up with each man crouched above his glowing console.

The last trip of a fascinating voyage of discovery was to the Shaw Festival Theatre in Niagara, a delightful modern 850 seat theatre set in a beautiful stretch of lakeside landscape. Because it is about 100 miles from Toronto they are self supporting so far as production facilities go. I spent an amusing while in the costume store, trying to identify which Shavian oeuvre each outfit belonged to. Keith Storey, the technical director kept score. Professor Higgin's caped plaid overcoat? Easy. The Ruritanian uniforms from 'Arms and the Man'? No problem. Joan of Arc's judging ecclesiastics outfits? Hardly worth attempting. Carried away I found a modern clerical outfit — I managed to drag 'Candida' from my memory, but was ten miles down the road home before the name of the Rev. Mavor Morrell popped into sequence.

The Shaw has a five year old M.M.S. and a mixed Strand and Century lantern rig, with, it must regrettably be mentioned, just the odd interloper from south of the border.

A quick look at the Falls, then back to the airport en route for our Shangri La at Brentford.

I had incidentally, hoped to visit the Canadian Parliament at Ottawa, where 24 Ianiro 1200 H.M.I.'s have recently been installed to light the continuous telecasting of debates which goes on. The House of Commons has a famous painted linen ceiling, so no lantern which would produce significant heat could be used — hence the H.M.I.'s.

The U.S.A.? As stimulating as ever. Canada? To an Englishman very like home, particularly in its Strand equipped theatres — except for those patch panels.

SYMPHONY:

mastered these, off to Hotel and rest.

Sunday brought a superb spring day, with clear Canadian air and such brilliant light that the editorial Pentax's meter went right off the scale even at 1/500 of a second at F.22! I purchased a map and set off for a place called North Bay. From hazy geography lesson memories I knew a large sea inlet descended into Canada, called Hudson's Bay, so I naturally assumed North Bay, being in the right direction, was part of same. I drove on almost deserted twin lane highways for several hours, all distances being given in kilometres, and then decided I couldn't get to North Bay and back in the day. When I did get back and looked at a bigger map, guess what, North Bay is only one third of the distance to Hudson's Bay! I did the same thing once in California, when I got the scale of my Esso road map wrong and took a short diversion which turned out to be 300 miles!

Monday morning, and after my large glass of fresh orange juice, two eggs over and an English muffin (yes, really!) I was ready for the story on Strand Century, of 6520 Northam Drive, Mississauga, hard by Malton Airport. And a very nice operation it is too, with a young and very enthusiastic staff led by an experienced international General Manager, Philip Bogod.

They have a large warehouse, stocking both British and American Strand lighting, plus, of course, Ianiro TV lanterns. A significant part of their business just as in the U.S.A. is in very large patch panels. The now universal European system, pioneered by Strand, of a dimmer per channel is only making slow progress in North America, so to an English visitor the typical theatre or TV studio lighting rig is a mixture of ancient shared dimmer philosophy and very modern memory system controls.

I was first taken to see Toronto's main theatre, the O'Keefe Centre. This trip involved me in a quick drive along a magnificent freeway, sometimes up to seven lanes in each direction, with fabulous reading matter along each side and overhead. A novel could be composed from these signs — how about "Squeeze

Right", or "80 on Ramp", or "Advanced Green Flashes", or "Collector Lanes"? Who can tell what these may mean? Anyway, when driving I simply copied everyone else.

The O'Keefe Centre is really very fine. Where marble should be, marble there is. The lobby is a sea of beige carpet, the walls are, as one English Chief Electrician said to me years ago, "Covered in muriels". The very auditorium doors would not seem out of place in a bank. Golden in hue, and as quiet and precise as if to a cash vault.

There are 3,200 seats, all with superb sight lines. The theatre has given up four seats in the rear stalls for the Strand sound desk. Why will so many architects, and consultants who should know better, cram the sound desk alongside the lighting control at the back of the topmost circle? In any large theatre, say 1,500 seats or more, the sound operator should be actually in his audience to do his work properly. The lighting control? M.M.S., in what I would call a 'Glyndebourne' desk, i.e. L shaped, with operator within the angle. On stage, a selection of Strand, Ianiro and Leko lanterns, and the usual patch panel, here to be found backstage actor's right. The famous Jim Fuller was our knowledgeable host.

A typical light midday snack — clam chowder so good and nourishing that the spoon stood up in it, and ham and cheese on rye. Some familiar touches of home can be found in Toronto. H.P. Sauce bottles on tables, medicines available from Boots and books from W.H. Smith.

After our snack, off to a big current Strand Century job. This is at the Canada's Wonderland Theme Park. As we drove out of town, a small but very jagged range of mountains broke the flat horizon. These man-made Matterhorns were part of our destination. What can one say of such a project? It covers many acres, and is now being completed by a medium sized hard hat army. I cynically tested a stone harbour wall, expecting plaster on chicken wire, to discover very real rocks indeed. The fences, bridges etc. are built of timbers of the general dimensions of



Alistair Morrison joined the BBC in 1941 as a "Youth in Training" at Aberdeen's Redmoss transmitter, and considers himself fortunate in being able to attend many technical courses at BBC schools.

In 1944 he joined the Fleet Air Arm as a trainee pilot and also trained in aerial photography.

In 1947 he returned to the BBC at Alexandra Palace, working briefly in T.V. sound before moving to "cameras". During a period on O.B.'s or "Remotes" he worked on live broadcasts including the Oxford/Cambridge boat race on the very first occasion when a camera followed the race by launch, pictures being transmitted from the launch to the O.B. control room. He was also involved in the first transmission when a camera was used in an aircraft for the first time, during a Battle of Britain anniversary.

In 1955 Alistair joined A.T.V. Elstree as Senior Cameraman on the start of commercial television in Britain, becoming Lighting Director on the early episodes of *Emergency Ward 10*. He subsequently lit episodes of such famous series as "Father Brown", and "Sunday Night at the London Palladium", and the whole of "The Power Game".

In 1978 a move to the Middle East, where the training of the next generation of creative technicians is combined with lighting, and an advisory role of sets, wardrobe, make-up, cameras and sound.

Alistair considers that the most formative remark made to him in the industry was a throw away phrase from Tony Hudspeth: "It's not only what you light which is important, but sometimes it is what you don't light" — Thank you, Tony!

RAMADAN the lunar month of fasting, is as harsh an introduction to the Arab world as you'll get. From dawn till dusk in a temperature of 125°F Moslems do not eat, drink or smoke, and the more orthodox do not even swallow their spittle. The result — dehydration. Many labourers who in the Arab world are often Indian or Pakistani, are carried semi-conscious to hospital. Some die refusing medical aid which in their opinion is at variance with the laws of the Koran.

As guests in Islam, Europeans are well advised to follow the example of their hosts, at least in public.

The first safe cigarette is lit after the gun booms over Dubai at sunset, signifying the end of the day's fast.

Puzzled at first by the accuracy of timing the gun in the desert with the Mullah's prayer on television, the answer was remarkably simple. In the T.V. Station's master control room, Ahmed "Ran V.T.R." of the Mullah's pre-recorded prayer and on the count down at three cued Issam, standing waiting at the control room window, who shouted to the policeman in the Land Rover, who by radio telephone passed on the message to the gun crew two miles away, who fired the gun. Boom!, "Ay Allah!" simultaneously. Devious? Effective!

During Ramadan there are so many hazards to the production of programmes, that it becomes the most suitable time for cleaning and maintenance. Four hundred lamps, including many laniro 5ks, barrel suspended, to be dropped in, a 10% neutral filter of very fine sand to be removed from the fresnel lens and the lamp-housing to be

blown clean and dusted. Studio 'C' being the busiest and biggest at 1000 sq.m., came first. Then Studio 'A' at 250 sq.m., and finally Studio 'B', used for Arabic topical discussions and such like output.

To the "sparks", four of whom cover the three studios, this was not a popular time of year, it being well nigh impossible to have their customary snooze between takes on production. Sadaanindin, Mahmoud, and Prejebadi were, to say the least, not amused, the fourth was on holiday.

Sadaanindin, Sam for short, more to break the monotony of dusting, than as a highly irregular occurrence in an ultra-modern television studio, quite casually broke the news that, of twenty fresnel lenses in some non laniro lanterns "mended" with "UHU", many were "not full completely safe", and suggested using stronger glue. "I am thinking Mr Hamish tell me it stick anything to everything." Said absolutely dead-pan and with a perfect impersonation of Peter Sellers.

Instead of using Arraldite, closer inspection showed that if two screws were removed from the stop plate on the "soft" side of the lamp, the plate turned through 180° and the two screws re-inserted, the plate no longer jammed, contact between lens and bubble was avoided, preventing cracking of the fresnel and blowing of the bubble; "All full completely expensive!" said Sam. As it took a long time for replacements to arrive, work continued for some months with "mended" ones.

The case of the "mended" lanterns typified the prevailing attitude towards

"THE MOVING FINGER LIGHTS AND HAVING LIT —"

(With apologies to Omar Khayyam)

by Alistair Morrison

studio operational maintenance. Equipment was just not being serviced properly, make-shift repairs being the order of the day. The department which suffered most was sound. Of three booms, only one was usable and it frequently produced rumbling if racked quickly. The improvised answer was a wooden gallows arm, with the mike taped on, rammed into a lighting stand.

Gathering dust in the corner of the studio was a Vinten motorised crane, which in two years was used only twice on static shots; the elevation worked well, the steering and tracking were totally unpredictable.

reasonable efficiency. Production time was reduced, morale improved, tension in the studio evaporated and it became fun again to go to work.

Pre-production on an Arab drama, as on a British drama, starts with a planning meeting; assuming that the script has already been read and inwardly digested. (I did see a script literally digested in the desert, when an actor left his script outside the O.B. van, and along wandered a herd of goats.) A synopsis in English having been supplied and read, the planning meeting was called for 11 a.m. on Thursday, changed to 4 p.m. Saturday, (remember Friday is the Arab day off,



A scene from "Urwa, Son of Rose".

Memories were evoked of operating the prototype, nicknamed "The Maserati" ... at Lime Grove Studios on the occasion of H.M. Queen and Prince Philip's visit, when my senior cameraman, Colin Clews, on the "Mole Crane", nearly got a parking ticket. The "Vinten", because of its mobility and speed stole the show, whizzing from one end of Studio 'G' to the other to such an extent that when the programme finished, live of course in those days, Prince Philip was only stopped from "having a go" by the time-table set for the royal visit.

The Arab cameramen's frustration was equally matched by that of their sound colleagues on the question of unusable equipment, due to general lack of maintenance.

On one occasion V.T.R. was so delayed by repeat after repeat, due to boom rumbling, that production ceased for four hours until a temporary repair was made.

Many a request, followed by many a demand, followed by a near nervous breakdown, culminating in storming into the Director General's office, finally produced the required result. Studio maintenance was given top priority. Hamish's maintenance department was reinforced by two ex-pats, thus reducing repair time. Replacements became more readily available, resulting in sound, cameras and lighting functioning at very

and come Saturday morning to be greeted with "Did you have a nice weekend?" quite normal), and finally discovered to be fixed for Sunday at 11 a.m. The discovery was made not on the Notice Board in the studio, but by a quick visit to Caesar, the Lebanese Chef "par excellence" in the T.V. guest house, champion shesh-besh (backgammon) player and an artist in his kitchen, providing feasts on Fridays guaranteed to satisfy the most fastidious gourmet in the Gulf.

"The Director, Salah Abu Hanoud, and his cast fly in from Jordan on Saturday," said Caesar. The planning meeting was arranged for 11 a.m. Sunday and production of "Urwa Ibn Al Wurd" (Urwa Son of Rose), an historical Arab drama, would commence Monday.

The "planning meeting", after a great deal of hand-slapping and kissing, consisted of a lengthy debate on the merits of working either from 9 a.m. to 6 p.m., or from 10 a.m. to 7 p.m., or from 2 p.m. to 10 p.m. or otherwise. The most difficult thing for an Arab to do is to make a decision, which may hurt someone else's feelings, and this was successfully avoided for the next half-hour, until Salah found a way out. "Alistair, which time would you prefer for lighting?". Having been primed earlier in the canteen by the sound and cameraman, 9 a.m.-6 p.m. and 2 p.m.-10 p.m. were rejected, on the

grounds that people with children would be prevented from taking them to school in the morning and seeing them in the evening, (the problems of lighting being irrelevant by comparison). 10 a.m. to 7 p.m. however suited the family men, and gave an hour in the morning for adjusting the lights, while leaving the evening free to visit "The Red Lion" or "The Rose and Crown", where "conversation" with fellow ex-pats was most welcome.

Confirming that the boom was operational (on his previous programme it had caused many delays), and that cameras were functioning satisfactorily, Salah was about to close the meeting when he was reminded that there was a question of lighting the production. "Take the top off the tents?" Calming him down took a little time, getting a gap in the tent-top a little longer. The meeting closed with a promise that the three Bedu tents we were shooting first would indeed have enough room for lighting, and depending upon results, a decision would then be made about the other twelve tents still to be erected.

Bedu tents are great for Arabs, the design today being as it was 2000 years ago. There is a section for the men, where they eat, drink and talk. Through a flap in the wall are the male sleeping quarters, where in our series many a man died, some naturally, others by request! The ladies' 'boudoir' adjoined. Here, great weepings, alternating with births and the occasional suicide, were the order of the day.

Dire forebodings by my predecessor, of cameramen prone to finding lens flares, and boom operators to creating mike shadows, had not helped my nervous system in the days prior to production, therefore it was only after completing the first three V.T.R. sequences that my heart returned to its normal position and my knees stopped playing "Annie Laurie". Not only had there been a total absence of the problems predicted but the pictures were good. From then on there was a noticeable lessening of tension in the studio.

Day followed day (2800K) and night followed night (steel tint No.67 key for moonlight and dimmed key with a No.3 straw inside the tent), until Salah mentioned five days location in the desert. His original plan entailed night time, as well as day time shooting, for which I ordered Ianiro H.M.I.'s. Later the night time was dropped, but the H.M.I.'s order still stood and in future must prove invaluable on this type of location.

Salah was adamant that, much as he had often wanted it, he could never get a "mirage" effect. Explaining further he said he wanted the effect which he had seen in "Lawrence of Arabia", when Omar Sharif appeared on camelback from the desert. "Oh, Freddie Young, you started something!"

"I'd give anything to get that effect," said Salah wistfully. "You're on," said I boastfully, "I'll make you one." "That would be wonderful," he replied sceptically. "Never do that again," I lectured myself two weeks later.

It had taken five trips to the Souk and innumerable frustrations, to find the bits and pieces needed. Now all I required was a fuel supply. Have you ever tried loading a gas cylinder into the boot of a Honda Civic? in a temperature of 125°F? Fortunately the "Red Lion" wasn't too far from the transmitter 10 km outside Dubai, where I'd "borrowed" the cylinder, so forthwith I sped to replenish my body fluids, then I had one for me.

Would you believe it, the "mirage-maker" worked! The "mirage" was used on a long shot of a horseman, with scrub trees in the middle distance. As Usama, the leading man, rode down from the dune and through the trees, we very gently, lost the "mirage", until,

when he rode into close-up, all was clear.

At least that's how we rehearsed the scene. On the take, the floor manager said it was his job to operate the "mirage" and would save me hanging about in the sun. Having shown him how and when to reduce the "mirage" I retired to the shade of the nearest tree.

Usama rode down the dune, through the trees into mid-shot before the floor manager, remembering the "mirage", panicked, and, instead of reducing, increased the effect, with the result that there was a burst of flame, a roar of gas, the horse reared and Usama was thrown. Usama, "Inshallah" (by the grace of God), was not too severely hurt, although the same cannot be said for the floor manager's feelings when Usama had finished with him. Evidently the floor manager had five fathers. On the retake, guess who operated the "mirage"!

The days spent in the desert were never dull, Usama's horse trying to kill him one day by galloping under a tree with a low branch — he was a hard rider. Abdulrani finding me a scorpion to photograph, their tracks were everywhere, but only Abdulrani, the vision control operator, succeeded in finding one.

Camels, complete with Bedu, arriving from nowhere in the early morning, hired for the day's recording, and, when that was finished, disappearing equally mysteriously back into the desert.

Najmi, the most elegantly dressed camera man in Dubai T.V., one morning with "cans" on, busily lining up his camera, catching sight of the horses arriving, dropping his "cans", swinging onto a stallion (no saddle), and blazing away across the desert. On his return, still at a gallop, slipping gracefully off the horse, donning "cans" and carrying on with line-up. Najmi is Bedu.

Five never to be forgotten days competing with the skin scorching heat and blinding intensity of the desert sun, where every piece of shade after ten o'clock in the morning becomes the Estate Agent's dream, "A most sought after property".

Reflector boards are the only way to compete with that monster in the sky.

Five days on location, five weeks in the Studio, to complete the thirteen half-hour episodes of weeping women and ferocious fighting tribesmen.

Six weeks to begin to like, understand and respect the Arabs.

In that blissful borderland between sleep and wakefulness, a dog barked nearby, challenged by another far off. More barking close to, terminated by a shot. Subdued howl in the distance.

Silence.

"Hm, Police in action. One pariah dog less."

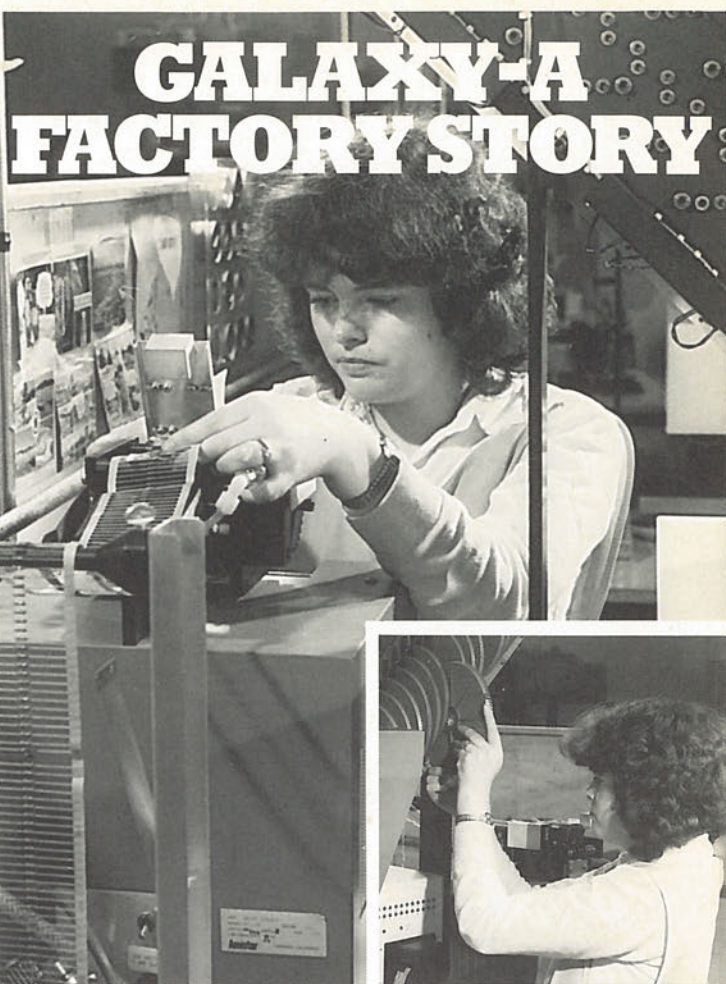
"Must be nearly dawn" proved correct when, moments later the Mullah intoned, "'tis better to pray than to sleep", from the Mosque opposite.

Like an echo the message was repeated from Mosques near and far as Allah's followers started their day.

Hardly had prayers finished than Westminster chimes floated across the creek, followed by the slow and ponderous striking of five o'clock, from the clock tower by the Maktoum Bridge, Dubai, United Arab Emirates.



Sadaanindin, Mahmoud and Prejebadi.



WHEN I first visited America's west coast, one of the sights a Brentford colleague took me to see was a truly fantastic collection of stone and brick and timber, not canvas or plaster, shops from medieval European to Cape Cod cottage in style. All these are actually within another building, a large brick warehouse type of structure, which is air conditioned! This 'village' is called "The Olde Towne" and is situated in a Los Angeles suburb called Torrance. The connection with our latest memory system?

This is because our Kirkcaldy factory, who produce all our printed circuit boards, as well as dimmers and lanterns, have recently acquired several brilliantly designed machines, called Amistars, which are built in Torrance. These machines not only simplify and speed up the production of printed circuit boards — the main substance and heart of any electronic equipment — they automatically feed the correct components in the correct order for the board being made, by means of a punched paper tape. Components are fed either from the flat round 'magazines', each containing over 100 components, to the right of the machine in our inset photo, or from 'bandoliers' which hold components rather as bullets are held in the original bandoliers. In fact these two pieces of technology indicate pretty clearly that the designers west of the Rockies location are also influenced by Mexico, just south of the border!

Up to 24 magazines and 2 bandoliers can be used. The boards, are fed into the Amistar by the operator from side to side and top to bottom, two tapered locating pins fitting into the holes which the diodes and resistors are to be fitted. A projected cross of light helps the operator get close to the right position, while the taper on the locating pins ensures final accuracy. The component is then fed from the magazines or from the bandoliers, they are formed automatically into a staple shape, inserted into the board and clinched for firm holding. The boards, now

fully loaded with resistors and diodes have the remaining components inserted manually, then go forward for flow soldering on another machine.

Obviously this type of equipment is not given away, but it is enabling us to at least begin to catch up on Galaxy demand. The size of this demand? Well, over forty systems have been ordered in the first four months Galaxy has been on offer, and the order rate for both T.V. and theatre systems is accelerating.

Because Galaxy is proving by far the most popular memory system we have ever introduced, stepping up production by new equipment seems good sense, so we have taken the plunge into this p.c.b., fully automatic production equipment.

After all, it is only reasonable to use the best to build the best.

The latest theatre Galaxy in the U.K.? The system going in June into the Apollo Victoria Theatre for the revival of "Sound of Music" starring Petula Clarke. The latest TV Galaxy? The system in BBC Television Centre. RMH



Anne Balfour, one of our Amistar machine operators, with a Galaxy printed circuit board she has just completed.

Top: Our photo shows a bandolier holding components.

THE EDITOR'S

ONCE again it was time last February to get out the Newnes 1953 Motorists Gazeteer and indulge in one of my favourite pleasures, the planning of a journey through the English countryside. Any fool can go via the designated motorway, but that is like living on hamburgers, instead of treating them as an occasional time saving convenience.

So that I could especially enjoy this particular journey I did temporarily accept 1981 motoring by deciding to make use of the Dartford tunnel — that twin tube pointed like a concrete shot gun by North Kent at the Eden of rural Essex. The first town on my journey was Billericay, where, in 1915 Lieutenant Leaf Robinson shot down the first Zeppelin of the Kaiser's war, then on to Chelmsford, pronounced 'Chemsford' by the nobs, through the beauties of Sudbury and at last to my goal.

Bury St. Edmunds is a delightful town, whose museum contains the death mask of William Corder, the infamous murderer of Maria Marten in the Red Barn at nearby Polstead, as well as a book bound in his skin. At a rather less sensational level, Bury also contains the Theatre Royal, a fine Georgian theatre managed by that fine Elizabethan, Mr Francis Reid. (Not 'second Elizabethan' Francis is a Scot!)

A bar snack taken at the Angel Hotel, where Mr Pickwick first learned of Mrs Bardell's action for breach of promise, then on to Western Way, the home of Telestage Associates.

The first impact is the glittering of the aluminium sheathing to the new extension, just being completed. Such has been the tremendous recent growth of Telestage that as well as acquiring additional factory area at Thetford, a new extension is currently nearing completion at Bury. This work will double the production space and will allow the drawing office to be on the same site as the factory. Previously such was the shortage of space that the draughtsmen lived like Edwardian drapers in some rooms over shops in the town centre.

Telestage are most well-known around the world for their lifts, grids for T.V. studios and theatres, revolves and all the other heavy engineering associated with putting on a show. Because much of this equipment has to be erected for checking and adjustment before shipping overseas — a good 80% of the turnover is exported — a large unimpeded floor area as well as a considerable working height is needed. The picture of the retractable seating being built gives an idea of the size of one of the new bays.

At the time of your Editor's visit two especially interesting jobs of a type not perhaps so widely associated with the Telestage name were "on the floor".

FLOATING ON AIR IN THE STUDIO

OUR own specialist seating factory at Lowton in Lancashire have, of course, for many years now produced both manual and electric driven retractable seating, but the kind that emanates from Bury St. Edmunds is rather special, in that some versions work on the hovercraft principle.

Two very interesting retractable seating contracts based on this system were under construction at the factory during my visit, one was for a T.V. station in an exotic part of the East, the other for one of the Studios at London Weekend in exotic S.E.1.

For readers not familiar with this increasingly specified type of seating I should explain that its purpose is to render a hall, theatre, leisure centre or in this case T.V. studios, truly multi-purpose.

One of the factors which normally limits the scope of any auditorium must be the layout of the seating.

Obviously a thrust stage, never mind theatre in the round, demands a totally different placing of the audience in relation to the performers compared to a traditional proscenium theatre. There are various methods of achieving these different layouts, so that the capital cost of the building can be as productive as possible by allowing it to change from, perhaps, a clear open floor for old time dancing, to a large conventional seating plan for a film show, or to seating at half capacity for a minority lecture.

The stage itself is often nowadays designed so that it can be retracted to leave a clear area. It can also be a conventional flat platform, or become a stepped series of rostra for an orchestra or choir. Inevitably weights must be fairly considerable if the structural rigidity which is essential is to be achieved. No one likes walking, never mind dancing or acting on an insubstantial or 'springy' floor. Weight leads to high static friction. This is the phenomena which anyone who has tried to push a cupboard laden with china along even a polished floor will recognise. To overcome high static friction it is necessary to exert considerably more force than would be strictly required to actually move the weight involved. Imagine our notional heavy cupboard suspended by a magic force a quarter of an inch above the floor, when the merest push would obviously send it gliding to its new position. When the object to be moved is retractable seating this magic force is actually provided by Telestage, using the hovercraft principle. The elimination of friction means that comparatively little power is needed to move the tiers of seating, and the whole re-arrangement process becomes a push button operation.

Apart from the convenience of mechanical working, there are considerable cost savings, as there is no need of extra staff to manhandle units at often inconvenient and thus overtime, periods. The 'float on air' principle also means that there are no heavy point loadings on floors, the

loads for the period of movement being spread out, through the medium of air, to the comparatively large area of the actual hover pads.

This is how the retractable seating actually works. The seats themselves are comfortably upholstered folding individual tip-up chairs, made from square section steel tube. They are mounted on one inch plywood set on square tube platforms which move over each other, so that when fully retracted the seating takes up only as much floor space as the depth of a single platform — about 4ft by the length of the row. There is a vertical space of about 1ft between platforms into which the folded chairs fold or unfold automatically as the platforms move over each other.

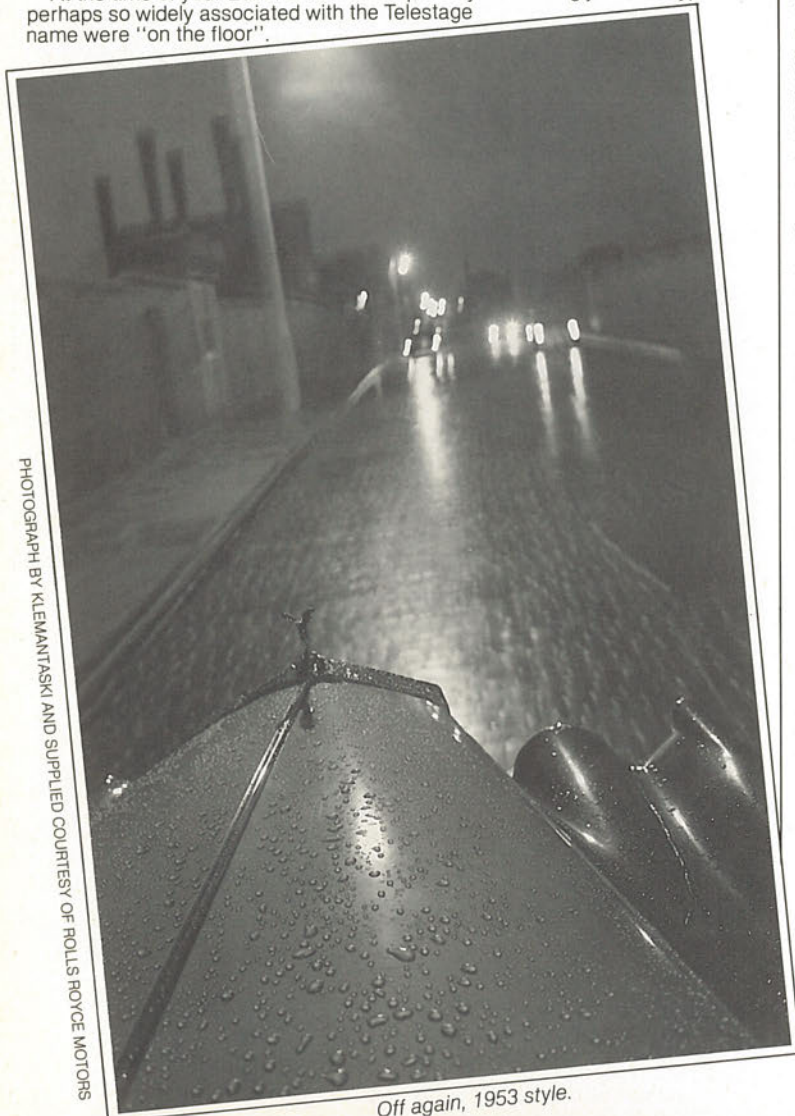
To bring the seating into motion powerful air blowers driven by 3 h.p. electric motors are turned on, which force air from the atmosphere through filters into a pressure chamber and from there down into hover pads mounted horizontally below the compressors. The pads, which vary in diameter between 1ft and 3ft depending on the weight to be moved, consist of a round steel backing sheet and a diaphragm of heavy rubber, pierced with a multiplicity of pin holes, to distribute the air forced in between the rubber and the back plate to provide the actual air cushion. Once this cushion effect has been achieved, then the electric crawler units are automatically activated to provide the motive power to bring forward or retract the seating. These crawler units consist of 1 h.p. motors driving four rubber tyred six inch diameter wheels through reduction gears and a double morse chain. Bearing in mind the elimination of friction, these units might appear to be rather over designed — the gear boxes, for example, would not look out of place on a British Rail High Speed Train, but the whole object is to have a mechanism that has tremendous margins of both power and strength so that years of trouble-free operation can be ensured.

An additional advantage of using the float-on-air principle is that the actual driving wheels are only operating when the air pressure has lifted the units, therefore the wheels do not carry heavy weight, and are therefore not going to exert a force which might cause scuffing or ripples in the floor surface, especially important in the case of a studio floor which may the very next day have camera dollies being pushed back and forth across it.

The hover pads, when not actually hovering, also spread the load of the seating over large contact areas, obviously again far healthier for a floor than the heavy point loading inseparable from solid tyred wheels with small contact areas.

As the platforms move forward, the lowest driven tier obviously emerging first, spring loaded bolts at the rear of each platform lock on to the platform below. As long as there is a load on the platforms, then these bolts cannot be withdrawn, so there is no possibility of any accidental operation of the system while an audience is on board!

Pre-formed open coil armoured



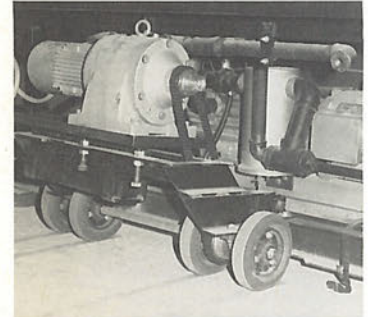
Off again, 1953 style.

PHOTOGRAPH BY KLEMANTASKI AND SUPPLIED COURTESY OF ROLLS ROYCE MOTORS

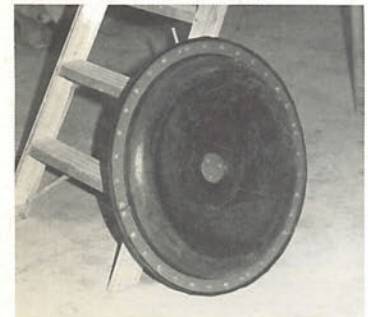
JOURNEYS



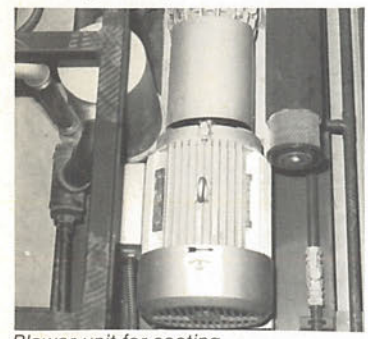
"Float on Air" seating being assembled.



Retractable seating driving unit.



A seating hover pad.



Blower unit for seating.

electric cables connect the blowers and crawler units to the electric supply and to controls. The use of mobile air blowers thus eliminates any need for the high pressure air hoses that some applications of the hover principle require.

SPECIAL LIGHTING FOR "THE WHO"

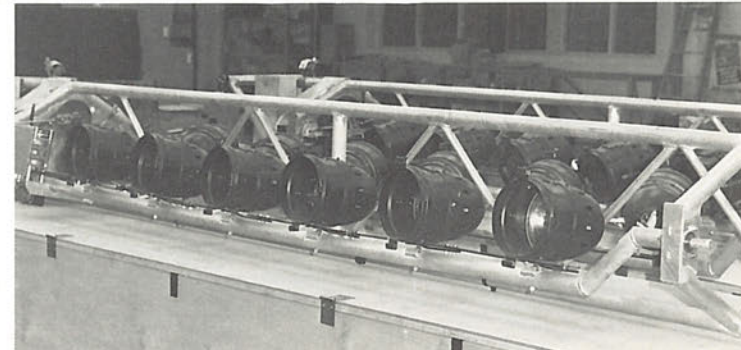
ONE of the projects I noted in the factory was a special welded aluminium lighting rig for the famous pop group. The two towers fit onto the wheeled bases, and the linked Par Blazers (note the new model already in production) can be moved so that their beams will rotate and gyrate on command. With a smoke machine in operation, or if the group are performing in Scunthorpe, the effect will be something between the

Fox film and the blitz. The ParBlazers are mounted on short spigots, and their gyrations are achieved by rods actuated by wheels which are in turn driven by toothed belts from fractional horsepower motors. The whole assembly fits into special flight cases for world wide touring.

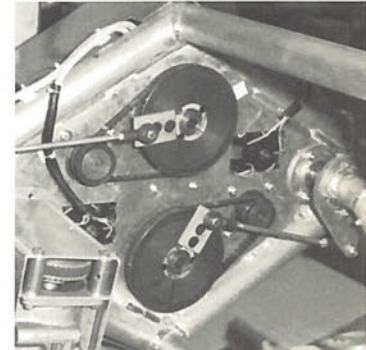
The design and construction of special lighting for the ever changing pop world is a constantly growing part of the business. A few years ago a "full size" flying saucer was built for the Electric Light Orchestra — was it 'practical'? Well, almost.

These two very diverse products perhaps give our readers some idea of the scope of expertise and capability available. From the lighting of this year's tour of a brilliantly successful pop group to complex engineering for multi-purpose auditoria, designed to give year after year of service with often the minimum of maintenance.

From time to time in TABS we will be bringing our readers news of developments from this cornucopia of technology for show business set in the heart of rural East Anglia.



ParBlazer rig ready for travelling.



Detail of rotation driving mechanism.

STRAND SERVICE

AT the end of the month is was off to Scotland to look into Strand Service.

One day, back in my favourite thirties, Lady Astor, from her Cliveden House drawing room, heard a mysterious mechanical sound from somewhere in the depths of that massive pile. She set off to locate the disturbance, and eventually ran it to earth in the boiler room. Several overalled and grimy maintenance men were struggling away. "What ever are you fellows doing?" queried our heroine, a vision in the latest summer Paris fashion and two ropes of enormous but genuine pearls. "Why, maam, we are scraping the boiler." "Oh," she cried, clapping together her perfectly manicured and beringed hands "What fun men have!"

I thought of this service story during a recent day spent with one of our Strand service agents. The company concerned are Caithness Electric, who from their headquarters in Airdrie cover Strand service calls

from the Orkneys to Berwick, and are thus, territorially, our largest home market official service agents.

I found my way to their premises, which lurk in Weighhouse Close, just behind a dignified Victorian stone building, now carrying the legend 'Toledo Junction Disco'. After a chat with their Managing Director, Alan Pratt, in whom the twin enthusiasm of service and electrical contracting work just manage to keep ahead of golf, I set off in pouring rain with Stuart Craig, their mobile service engineer on his rounds. Stuart has been with Caithness for four years, but has worked on Strand equipment for a good deal longer, having been a theatre electrician before undertaking his present work. He was for some years at His Majesty's Theatre in Johannesburg, working an 80 way Grand Master, so has a wide view of the lighting world both old and new.

Our destination was the MacRobert Centre, the very pleasant modern theatre on the campus of Stirling University. Alan Seaton, their technical supremo, had been experiencing some problems with

their Duet Riggers Control.

I should mention here that Caithness, and two of our other U.K. service agents, as well as our Irish Agent and many of our overseas agents, all have Duets as spare systems in their depots. Should a customer's system fail, it is thus a straightforward matter to either loan the customer the 'service spare' Duet while their own is being repaired, or a needed part can be taken from the service unit and fitted to the customer's system. Because all service units are kept in 100% condition by our agents, with frequent testing, all the electronic components are automatically thoroughly 'soaked'.

I should mention that our customer of the day, Alan Seaton, hails from that inimitable land of Northumbria, and any little break down of his Strand equipment provokes the odd Geordie quip. Example:

The Editor, as the Duet cover is raised, "Awful lot of cigarette ash in here, Alan." Reply: "Waiting for it to

Continued Overleaf:



"It brought tears to my eyes, man!" The Duet Riggers Control. See text for explanation!

go wrong made me so nervous I had to keep smoking!"

On a more serious point, Stuart Craig told me that 90% of his call outs were on switch boards, rather than lanterns or dimmers, and of that 90% he put down the greater part to dirt and dust getting into systems. This raises a strange fact, which I have noticed on hundreds of theatre visits. Men who would always put their car in a garage, or their tools in a toolbox, for some odd reason will NOT cover up a board when it is not in use. Every Light Palette, for example, which we have delivered, has a specially tailored plastic cover provided and I HAVE NEVER SEEN ONE IN USE!

I will exclude from my strictures our German and Scandinavian customers, but I am afraid we British are positively Latin in this respect.

The fault to the riggers control turned out to be at the board end, but this was only discovered after taking the hand held unit to pieces — and there are a lot of pieces involved.

Once again, our Northumbrian friend spoke: "Richard, why did you make the riggers control so heavy — I tried using the wrist strap while setting lanterns and nearly knocked myself out." Your Editor, in a rather holier than thou tone "Why didn't you tie it to your belt?" The irrepressible Seaton: "I did try that, man, but it swung a bit and brought tears to my eyes!" What can one say? The reason, of course, that it is rather heavy is because it is in a strong cast metal casing, not plastic. Heavy, perhaps, but no one has broken one yet, and they have been dropped from Tall-o-scopes!

Off to the next call, a school which shall not be identified, where the

complaint was a non functioning Mini II. As this is about as frequent as a teetotal theatre electrician, Stuart was duly suspicious. He opened up the patient, and discreetly — the school master was with us — pointed to somewhere in the Mini's intestines. What he pointed out to me was a bridge made of four resistors where there should have been four diodes! Here was demonstrated another frequent call out cause — the attempted repair that didn't work. Fortunately, perhaps although all electronic equipment is actually becoming simpler, it often looks very complex, and this probably deters many less knowledgeable folk, thus saving a good many problems, as it were, by accident.

Our photo shows Stuart Craig at work on the MacRobert Centre Duet, while Alan Seaton plays the role of the plantation overseer! Note the old Threeset in the background, which acts as the back up to the Duet. One of the many Duet advantages, of course, is that nearly all older Strand boards can be used for back up, thus saving the need to purchase a pin patch or lever desk.

In a future issue we will be covering the world wide service operation for the big systems that is based on Brentford, and which has caused the name of our Service Manager, Terry Twyford, to be spoken of so often, and in such various accents, from Tokyo to Helsinki.

For the name and address of your local official Strand Service Agent, please write to the company.

Stuart Craig works on the MacRobert Centre Duet, while Alan Seaton supervises.



MYSTERY PHOTO

DOES our photo show part of the cast of a revival of "Singing in the Rain"? Does it show three gentlemen in the yard of the Telestage factory while expecting a downpour? No, it is actually, left to right, Gordon Beattie, of A.C.F., our South African agents, George

Templeton, our Director and General Manager and Derek Tugwell, also of A.C.F. They were all about to plunge down a goldmine, no doubt assuming that this was better bet than the entertainment technical equipment business.

S.A.I.T.T. SYMPOSIUM

THE South African Institute of Theatre Technology are holding a symposium and allied technical exhibition at the State Theatre in Pretoria from 10th to 15th August.

A.C.F. will be showing a wide range of Strand equipment, including a top

specification Galaxy system — over forty now ordered from around the world as we go to press — and a small team from the U.K. company will be in attendance on the A.C.F. stand. They look forward to seeing many theatre friends during their visit.



ALI BABA'S CAVE LONDON W12

by Richard M. Harris

COME with me, dear reader, on an imaginary journey westwards from the fashionable London that you probably know so well, to discover a most unlikely part of the Strand Group.

We first circumnavigate Marble Arch, then along the Bayswater Road to Notting Hill. This name, incidentally, derived from "Nothing ill", our ancestors considering it an earthly paradise. Here we pause briefly to examine the Coronet Theatre, designed in 1898 in the best decorated stucco style by W. G. R. Sprague. This theatre, currently operating as a cinema, even though relatively so close to the West End was always considered a provincial touring date. Imagine the chagrin of a Victorian touring actor who after criss-crossing Britain for thirty weeks, with his Sundays enlivened by waits at Crewe Junction or New Street, finding himself within five miles of London's theatrical flesh pots, before inexorably being whirled away again to Hull or Halifax!

These sad thoughts put aside, another couple of miles westward takes us to Shepherd's Bush Green. What name could better conjure up a charming rural vision? What lambs gambol, what nymphs, what shepherds? Reader — forget it.

Shepherd's Bush Green today consists of an acre of struggling grass surrounded by a river of traffic. The sole two objects of interest are the Shepherd's Bush Pavilion, now the Odeon, a 1924 super cinema by Frank Verity in his academic and rather lifeless Roman manner, and the Shepherd's Bush Empire, a former variety theatre, now a BBC television studio.

I remember being taken as a six or seven year old to the Empire one Christmas to see Jack and the Beanstalk.

The second half ended with a marvellous practical set which featured half a dozen flights of stairs of varying heights which on the S.M.'s command and by stage carpenter's magic, changed instantly into 45° slopes, the steps suddenly flattening out to form a smooth and slippery ramp which precipitated the incumbent comics and dame violently towards the floats. In those far off days, before women's lib, the real girls — and here I must confuse overseas readers — including the principal boy, were only sent down very short flights, to where a chivalrously placed mattress hidden behind a ground row received them.

We drive straight on, leaving the theatres and the memories on our right, and about a hundred yards further we turn into a cobble stoned narrow alley to reach an unbelievable cavern of riches called, somewhat prosaically, Rank Strand J.M.B. Hire, of 52a Goldhawk Road, London W.12.

J.M.B.'s business is the hiring out to television, film and theatre producers of an incredible selection of light fittings, nearly all 'practical', plus an extraordinary mixture of objects d'art which go under the generic description of set dressings.

Oil lamps for the interior of a Haworth Parsonage? Nothing easier, Sir, brass or china, oil burning or electrified?

A chandelier whose brilliant sparkle will match that from the tiaras of a bevy of Duchesses gathered below for the final act of a T.V. production of Pygmalion? A wide choice, Sir, do you wish real candles, gas or electric operation?



The designer's decision of course, but the question raises an interesting point. Would a foreign embassy in G.B.S.'s London of 1913 have had electric lighting? Sir John Betjeman may write, in his verses on Baker Street Station Buffet "Let the dazzling vacuum globes hang clear", but he was describing an arts and crafts movement interior of the same date, while an Embassy in its grander manner might well still cling to gas. Would any of the five million viewers care? Well, I would, and so would you, gentle reader, or you would not have come so far on our westward jaunt.

I should perhaps explain here why Baker Street came to my mind. Although my London area home has always been on the Southern Electric, I have for many years looked on the suburb of Pinner as a kind of unattainable elysium. When I had a dreary job in London twenty years ago I frequently lunched in this very buffet on the theory that passing Metropolitan trains sucked behind them the

cost of car insurance, a time warping experience in itself, I considered the problem of Elizabethan age set dressings. Luckily our cave contains not only wooden bowls and plates for the comic servants, but even beautiful brass door fittings, statues etc. for the gentry.

Poor Yorick's Skull? — No problem! A wooden candle lantern to help a king's murderers find their victim in Berkeley Castle? Nothing easier! And all available by the week!

As I made my tour I noticed that J.M.B. don't, for obvious reasons, acquire purely contemporary items, they wait twenty years for the vintage to mature. There is one area of exception to this. I discovered one room of light

delicious airs of Pinner, and thus refreshed, I would resume my labours.

Perhaps the designer is responsible for materialising a nineteen twenties Galsworthian office? A selection of suitable upright telephones is available, plus typewriters with E.s.d. keyboards, suitable for a 'Thoroughly Modern Millie' to type upon.

Possibly our production is a revival of Rattigan's "The Winslow Boy"? Readers may remember that act two features a demonstration of that 1910 dance craze, The Bunny Hug, by the sister and elder brother. Well, suitable large horn gramophones for either cylinder or disc are available. Needless to say, there is also a range of that peculiarly thirties status symbol, the Radiogram. A silent group of them, come at last to rest in Goldhawk Road, seem to contain the very ghosts of Roy Fox and Henry Hall.

Is our designer preparing for a fifties angry young man revival? A group of rather depressing oil stoves is available to assist the mood. I looked for an actual kitchen sink, but perhaps it was out on hire.

I was at Television Centre the other day, itself only a mile or so away and while listening to two be-doubletted and be-hosed actors discussing the

standards and wall fittings whose unexampled hideosity told me they were made in 1981.

To name productions in which J.M.B. artifacts have played a part would be too long to avoid the grossly tedious, but perhaps a snatch of overhead dialogue between two staff members will convey the scope.

First staff member, holding aloft a magnificent Georgian pedestal candelabra: "Is this the one for 'Grange Hill'?"

Second staff member, in the scornful tones of an Artful Dodger to a young and green Oliver Twist: "Nah! Use yer loaf, it's for 'Yes Minister'!"

*For overseas readers I should explain that these are weekly T.V. series, the first about a kind of Blackboard Jungle school, the second about the highest reaches of the Civil Service.

Top left: A selection of the clocks on hire.

Top right: An obviously pre-OPEC selection of oil lamps.

Above left: What is going on among the JMB vases?

MILESTONES



by Heinz Fritz

Heinz Fritz, the Manager of Strand's German Company, was born in Koenigsberg in East Prussia in 1939. After attending the local High School he was commercially trained within the electrical industry. He joined the company who formerly represented Strand in Germany in 1963.

When Strand set up their own company in 1967 Heinz was promoted to become its Sales Manager. He was appointed Director of Rank Strand GmbH in 1977 and under his leadership Strand has achieved its current leading position in the German theatre equipment market.

RANK Strand Germany have recently carried out the lighting to the new B.M.W. Motor Company's Museum at their Munich headquarters.

The Museum is housed in the mushroom shaped building next to the office tower, to the left of our photo.

Entrance to the exhibition hall is by escalators that take the visitor to the top of the building, so that gravity assists his descent through the exhibition itself.

The visual arts employed here are a new departure for this kind of museum. The overall artistic approach was the responsibility of the well-known composer conductor Eberhard Schoener, the man who formed the Munich Youth Symphony Orchestra and the Kammer Opera, and the catholicity of whose tastes and talents is proven by his reputation more recently in the field of electronic music. Also contributing was the famous scenographer, Professor Wilfried Minks, lecturer on scenic design at the Hamburg College of Building Art.

The whole direction of these two highly talented men has lead to the exhibition being staged almost as a continuous theatrical event.

The exhibits are displayed in the political, economic or artistic environment of their year or decade, being impressively brought to life by using models, background projection and, in some cases, even "March of Time" film from the period. One can see Marlene Dietrich leaning her svelte length against a car of the 30's, the Tiller Girls of Palladium fame, swinging their beautiful legs plus Meister Grock — one of the best known clowns of his day.

One can see Hitler, Eisenhower, Adenauer and the "Wirtschaftswundermarcher" Ludwig Erhard, as well as Marilyn Monroe! Elvis Presley gives out with the aid of his infamous guitar. Via more than a hundred monitors, one can watch various films

from seven decades, and over earphones listen to the sound for the various video programmes offered. What interests one most can be selected and taken back home on a computer print-out.

The museum itself has been in existence since 1973, averaging a quarter of a million visitors per annum, with a pretty good mixture from all over the world. This rather unusual popularity for a "company" museum is due mainly to the exclusive BMW image, especially abroad, but also partly because it is situated directly opposite the Munich Olympic Stadium.

Since its foundation the BMW museum has shown BMW vehicles only and, as a sideline, the technical development of components for these such as engines and headlights. The highlight previously was a 360° multi-media show.

The idea of changing the complete concept began with a special exhibition called "Turning Point 1930" at the time of the 50th birthday of the first BMW car, the "Dixi", which was displayed in direct conjunction with its time, taking the visitor on a journey through culture, science, politics, sport and techniques of the end of the 20's and the early 30's. (Every English old car enthusiast, and naturally your Editor is one, will know that the "Dixi" referred to was actually our own dear old Austin Seven, made under licence in Munich. This was the car designed by 'Pa' Austin, one evening after dinner, on the billiard table of his Warwickshire home. Next morning a draughtsman was summoned from the Longbridge factory to transfer the chalky lines into a more professional medium. Anyway, I doubt that 'Pa' wanted to tempt the drawing office by installing a billiard table. Ed)

Based on the results of this experiment, BMW engaged Herr Schoener and Professor Minks in Summer 1979 to further develop the ideas first presented in "Turning Point 1930". In their apprentice centre in Munich a plywood scale model of the museum was built and freighted to Berlin where the newly-formed artists' workshop began the job of putting their ideas into realisation. These impressed BMW management immediately and the go ahead was given for a re-organisation of the museum.

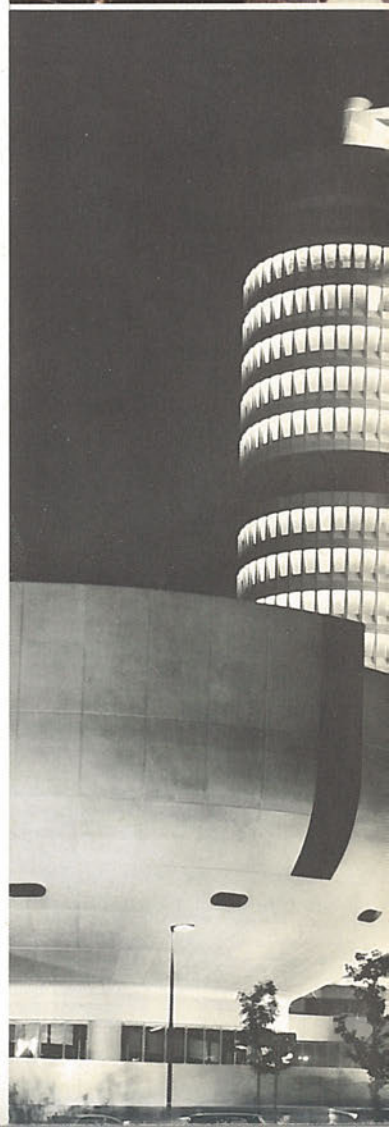
From December 1979 a crew of forty, supported by various craftsmen, worked virtually round the clock to enable the re-opening on Friday, April 11th 1980 to take place.

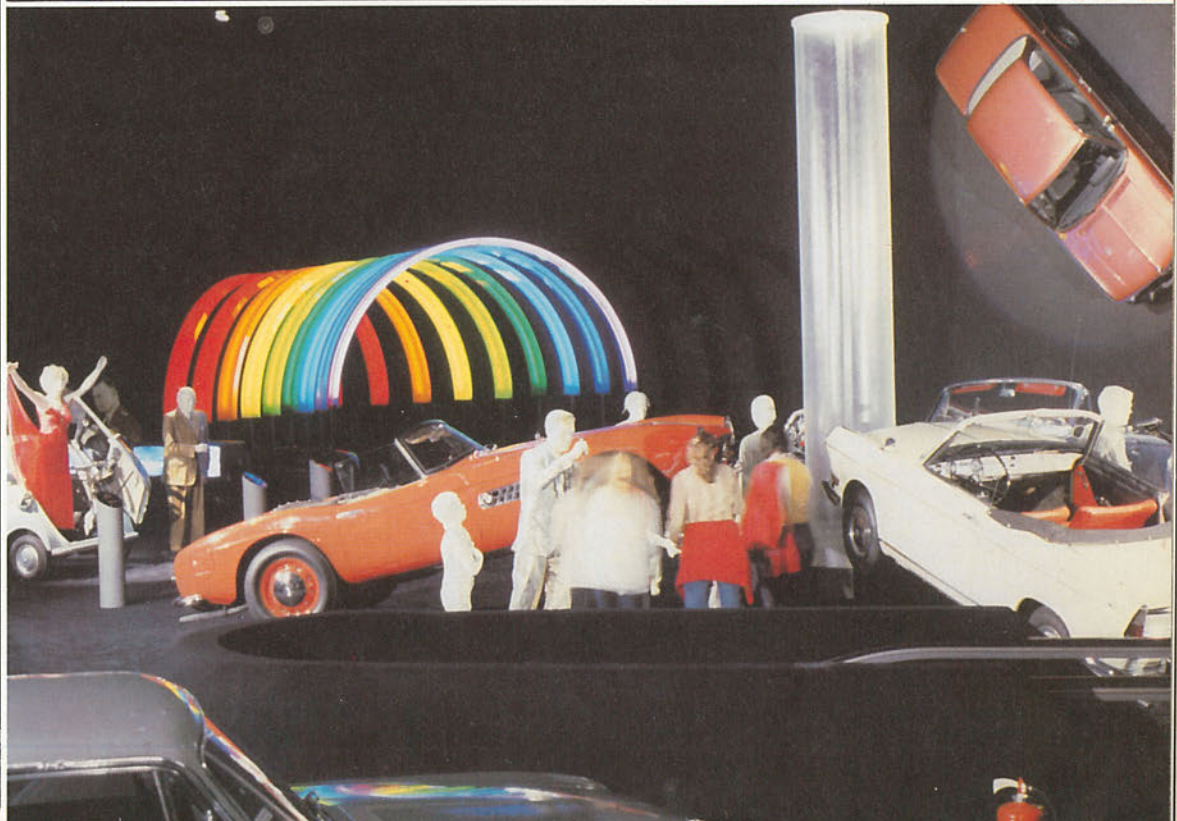
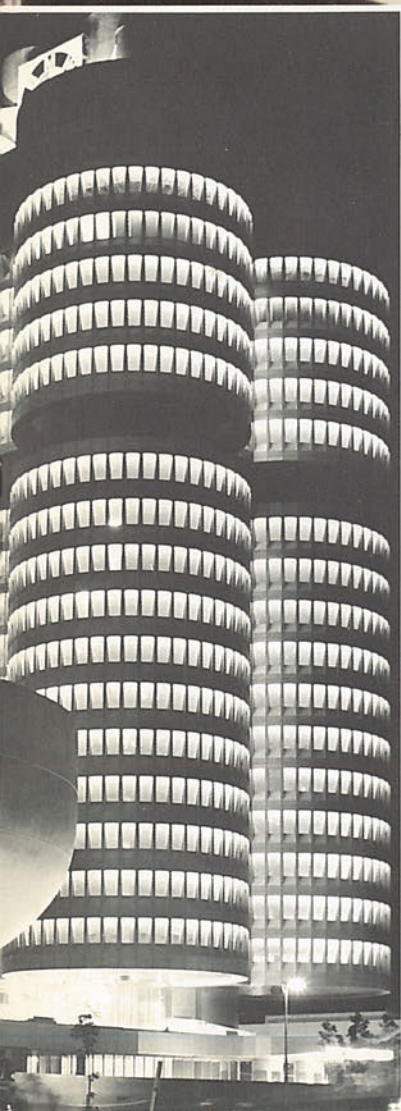
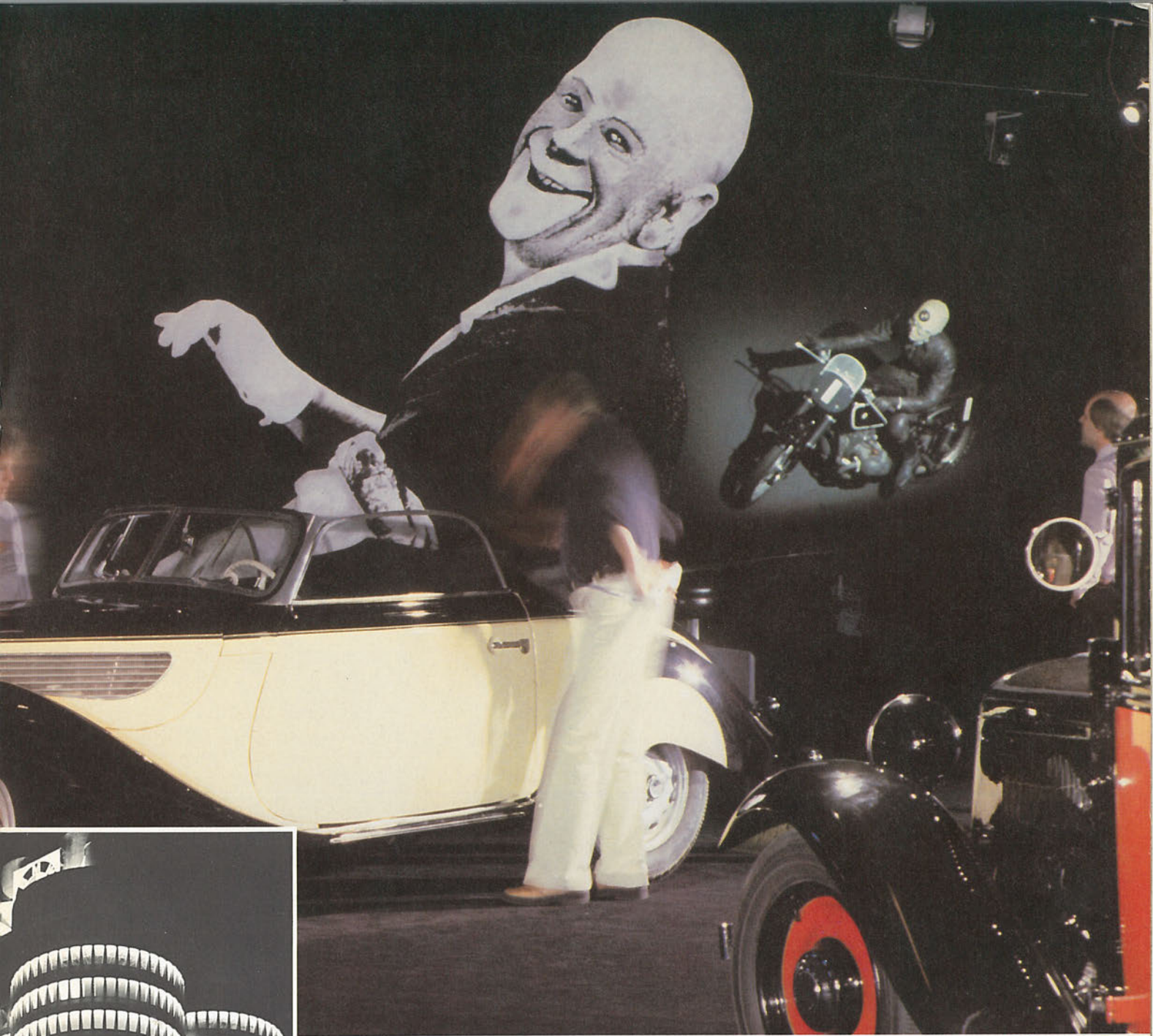
No exhibit stands alone or without purpose. Each piece is a part of an artistic composite which shows the technical development in relation to the people and their life in those times.

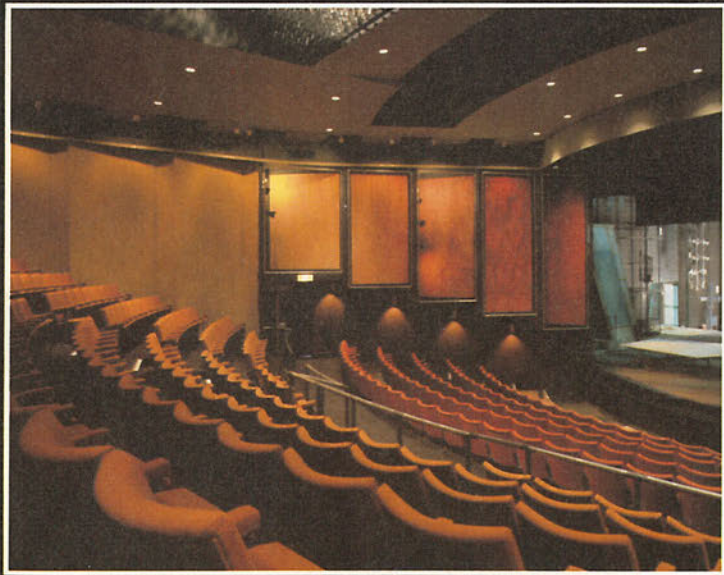
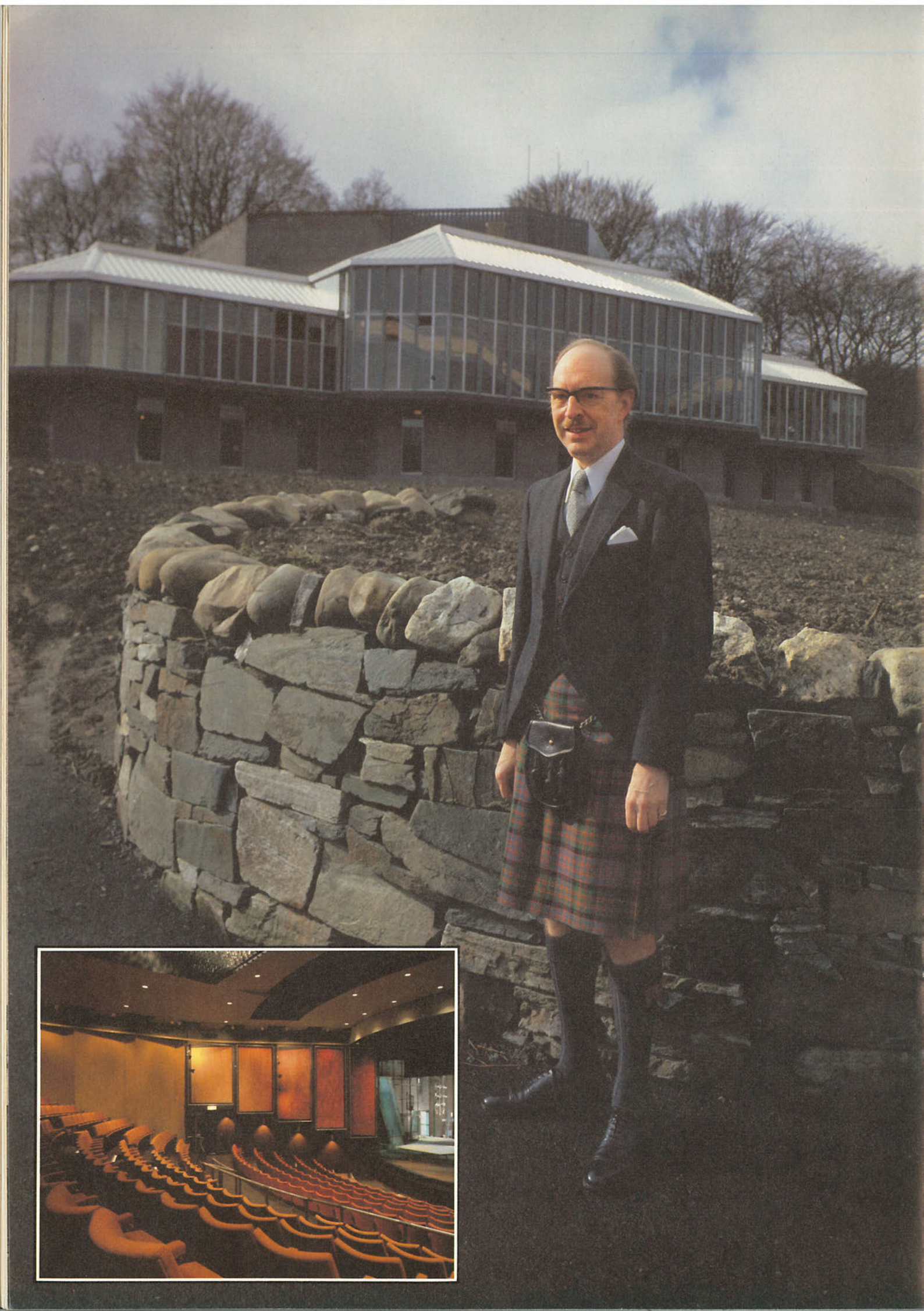
Strand's part in all of this was to supply lanterns such as 60 Patt 823's, 40 Patt 23's, 30 Patt 803's and a couple of T Spots to put the exhibits in the right light. There is no dimming as such but everything is controlled through a programme tape and relay switching.

Because of prolonged exhibition opening hours, it was decided, in the interests of lamp life and thus running cost economies, to run the lanterns on a supply permanently stepped down to 210 volts.

So — the next time you are in Munich, don't only visit the beer halls and cellars, but take time to have a look at the BMW's.







Ireland's Scottish Triumph

by John Wyckham

NEWSPAPER headlines, it might be said, are not appropriate in a magazine published twice a year, but I hope I may be forgiven my choice of title in this instance for it heralds the conclusion of what is perhaps one of the most remarkable 'battles' in British theatre history — with decisive victory for the chief protagonist.

On 19th May 1951, under the direction of one John Stewart, a Glasgow businessman, the Pitlochry Festival Theatre first opened its doors to the paying public with a production and British Premiere of "Mary of Scotland" by Maxwell Anderson. Perhaps more correctly I should have said that it 'unlaced its tent flap', for the early seasons of plays given by the company took place in a large marquee which was erected annually on a hillside site in the centre of the highland town of Pitlochry, some 27 miles to the north of Perth on the A9 trunk road to Inverness.

To many U.K. readers of TABS none of that will be news but, in deference to overseas readers and the less well informed, a resume of the facts might be helpful.

John Stewart had been the director of a well-known Glasgow commercial college, Skerry's, run by his father and elder brothers. Although not an actor, director or writer, his heart always lay in the theatre. Leaving the world of commerce after having founded and run the Park Theatre Club in Glasgow from 1941 to 1949, Stewart moved his attention and residence to a house and site in Pitlochry known as Knockendarroch, from where he directed the early tent operation, later to become the 'temporary' or 'semi-permanent' but rigid building which was in use until the end of 1980.

Sadly, John Stewart died in 1957 at the age of 55, some 24 years before his dream of "a permanent theatre in the hills" was to be realised. He need not have worried, however, for he left his hopes and aspirations in the capable hands of his General Manager from the outset, Kenneth Ireland. The next two and a half decades are legendary.

Kenneth Ireland, OBE, BL, DUniv — or 'the good doctor' as he is affectionately known to many since Stirling University awarded him an honorary Doctorate in 1972, was a lawyer by training and profession. In 1946 John Stewart persuaded Ireland — newly demobbed from the army — to abandon his legal calling and to join him as General Manager at the Park Theatre.

By 1948 the company had toured Scotland and — perhaps prophetically — a week after playing the Town Hall in Pitlochry, Kenneth Ireland married Moira Lamb, one of the Park's leading ladies. In 1949, with the closure of the Park Theatre, Kenneth and Moira followed John Stewart to Pitlochry.

What really had driven Ireland to endure the vicissitudes of seasonal repertory drama, in a small Scottish township at the gateway to the Highlands, for thirty years can be known only to him. However, he will tell you that it has been the visionary influence of those early years with John Stewart, his love of the theatre generally and drama in particular, and absolute conviction that a summer season of plays in repertory could be made to succeed in the centre of his beloved Scotland. Certainly it was this singlemindedness and devotion to the cause that resulted in his being honoured in 1966 with the OBE.

"Stay six days and see six plays", with occasional variations on that theme, might be said to be the motto of the Pitlochry Festival Society, the operating company for which Kenneth Ireland is both Festival Director and Secretary. The town, comparatively unknown in 1951 and from which the company takes its name, has most definitely been put on the world theatre map by him. With its annual seasons of drama, interspersed with a wide variety of Sunday concerts, ever changing Art exhibitions — and the "Brown Trout" Restaurant, both town and company are now known and respected throughout the world. John Stewart may have been the man of vision but his successor has most certainly proved a man of action. The good doctor's publicity machine has long been the envy of many a P.R. team in the UK, and his meticulous management and direction the subject of much jealous 'Green Room' gossip.

So! The scene being set and this article — after all — being about the NEW Pitlochry Festival Theatre, perhaps I may be forgiven for skipping a decade or two of the struggle to establish the festival as an annual event; to keep faith with its supporters; to live down any failures and to exploit its successes and now turn to a moment some 15 years ago when I myself visited Pitlochry at the behest of the Scottish Arts Council. My brief was to take a close look at the operation as a whole, but with particular attention to the premises and, at the request of the

Governors of Pitlochry Festival Society, to prepare a report on the viability of the project as a modern theatrical venture.

Sufficient, I think, to say here that I did find the whole operation to be very much a viable one, but in need of assistance. Many persons in high places had doubted that it was. "We don't really understand why it works, or why we should support it" an official once said to me. "The standards seem to fluctuate so much and yet the patrons continue to pour in each year". It transpired that officialdom had been unable to see the tent for the trees! Even though the marquee had become a fixture in 1953, when a semi-permanent structure of steel frame with asbestos cladding was built around it, many did not awaken to the realisation that Pitlochry Festival Theatre was there to stay and Kenneth Ireland very much a force to be reckoned with.

Perhaps the first "Wyckham Report" helped a bit, for most certainly the corridors of power in Rothesay Terrace, Edinburgh and Piccadilly, London began to rumble with the mellifluous mutterings of the cultrite vultures... "could it be that Pitlochry Theatre really IS worthy of support?"

That same Report was not without its effect on the Pitlochry company itself, partly by accident (a typing error) and partly intent. The accident, which caused an eminent member of the Festival Society's Boards of Governors to resign, prompted that person to express disgust that an Englishman had been engaged to 'investigate' this very Scottish phenomenon and then had the audacity to refer to the local Loch Faskally as — wait for it — LAKE Faskally! If that was the way in which London and its Sassenach counterpart in Edinburgh conducted their affairs then he (an eminent governor, who it was rumoured intended to resign anyway) would resign forthwith! Was it coincidence, one wonders, that the fortunes of the company seemed to improve from that day forth?

It was, however, the end of that Report which gave Kenneth Ireland and his Board greatest cause to harden their resolve and determination to see — in their lifetimes — a new and permanent theatre building effected in the town:

"The company cannot move forward, nor can the image of Pitlochry, so long as the company has to work in its present buildings. If money cannot be found for the 'Dam Site' scheme or a new building at Knockendarroch, then make-do-and-mend is the order of the day and within five years Pitlochry will be reduced to the level of the South Pier summer season at Smugsbury-on-Sea."

I am delighted to have been proved wrong, at least in my time scale. Maybe in some small way an Englishman helped to win that 30 year battle.

The rest of my tale reflects the ceaseless energy of K.I. and his Board to raise funds for a permanent building, built of bricks and mortar, to replace the ageing and unsafe semi-permanent structure which has cocooned the original tent (the roof of which remains in position even today) for nearly twenty eight years.

In the summer of 1967 a design team was appointed by the Board to design a new theatre on a new site. Headed by the eminent Edinburgh architectural practice of Law & Dunbar-Nasmith, the team set to work on plans



John Wyckham has had twenty years of practical experience in the theatre, covering stage management and direction, general management and technical administration for both commercial companies presenting drama and musicals and for subsidised ballet and opera. Among the latter are the Sadlers Wells Opera and the Royal Shakespeare Company.

He first practised as a Theatre Consultant in 1960, and founded his present practise, John Wyckham Associates, in 1970.

He is also Founder Member of the Society of Theatre Consultants (Chairman 1974-79); Founder Member of Society of British Theatre Lighting Designers; Director of Theatrespace Ltd.; Council and Executive Committee member of The Association of British Theatre Technicians; Chairman 'Sightline' Editorial Board (1980-81).

As a consultant John Wyckham has, in addition to the Pitlochry project which is the subject of his article, been in charge of schemes for the MacRobert Centre, University of Stirling; the Theatre Royal, Glasgow; the Eden Court Theatre, Inverness and the Palace Theatre, Manchester. These in addition to many other projects, both in hand and completed, at home and abroad.

Continued Overleaf:

to fit a site high up on the banks of the river Tummel overlooking the massive hydro-electric dam which controls the waters of the man made lake — sorry — Loch Faskally. Not surprisingly it was known to the team as the 'Dam Site', and occasionally other names! For many reasons, including such as cost (as always), land ownership, access, local and national politics, that scheme had eventually to be abandoned. There followed then a period of distinct depression — at least for K.I., his governors and the design team — if not the country as a whole. No less than eight alternative sites were investigated over a period of three or four years; during which time serious inflation began to hit the country. This site had a water problem; that one had a rock problem; access to another made it impossible; local objection was likely to scupper a fourth, and so on through the entire list.

However, in 1971 a gleam of light appeared on the horizon, a new and more detailed Brief was formulated and serious design work started for a site on the banks of the Tummel, further down stream but on the same side as the previous one, owned by the Hydro-Electric Board. Known as the 'Laboratory Site' it was partially occupied by a number of wooden huts used by the Hydro-Electric Board for research and development. Although not ideal — it was known to have a mosquito problem and access to it was under a low and narrow railway bridge — the site was at least in a beautiful part of Pitlochry. The Hydro-Board were prepared to make it available to the theatre, there was unlikely to be much — if any — local objection, and the need to get started became ever more pressing. By this time inflation was rampant and the Chief Fire Prevention Officer and structural engineers were making ever more gloomy noises that without spending large sums of money at Knockendarroch the Theatre would be forced to close down!

Alas! The 'Laboratory Site' was not to be. Costs rocketed — or at least budget estimates — when site problems came under closer scrutiny. The original Brief for that particular site was pruned, the aspirations of the theatre's technicians severely checked, the hopes of the management dashed yet again but, in spite of all that, the nearly despondent design team — goaded on by a tight fist quantity surveyor — failed to get the newly briefed building onto the site for the sort of estimated final cost which the Board of Governors thought it could raise.

Pause for thought!
It was then that the ever diligent Kenneth Ireland pulled site number eleven — or was it twelve — out of the proverbial hat. Thanks to a tip-off from the local Planning Officer, he discovered a field on the south side of the river Tummel, sandwiched between the river and what turned out to be the ultimately preferred route for the A9 Pitlochry By-pass.

A Scottish widow, now living somewhere in London, had owned the land but transferred it some two years previously to the ownership of her son, then working as an engineer in Malawi!

The intercontinental telephone and cable lines between Scotland and Malawi became red hot! Further delay was perhaps inevitable once 'Mr Malawi', as the owner became known to the Theatre Board, reacted predictably after learning that his recent inheritance — a 4.7 acre field in the middle of Scotland — was wanted for building — a theatre! The value of the site rocketed, at least in Mr Malawi's eyes, and for a while to a point which put it financially out of reach of the Pitlochry Festival Society. Then reason prevailed, assisted to some extent by the Community Land Act, and the freehold of the site known as Port-

na-Craig passed to the ownership of the Society.

Probably the most beautiful of all the sites which had been under consideration, even Port-na-Craig was not without its problems. Partly fronting the river bank and partly behind a row of listed cottages the approach from the road is level but as the site turns towards the river it becomes steeply sloping. Within three hundred yards of the mighty hydro-electric dam (and a great roar when the sluices are opened), it is backed by a high bank and a wooded area which, thankfully, shields it from the new A9 Pitlochry By-Pass. The views to the north, across the Tummel and to Ben-y-Vrackie (2757ft), are splendid.

At last, after thirty years, it is here! And at last — in deference to the content of this magazine — I have reached a point of technical exposition.

So desperate was the need for a new and permanent theatre to be built, now to happen during a period of the worst-ever inflation in living memory, the governors were forced, after gaining ownership of the Port-na-Craig site, to re-brief the design team yet again. This time it was very simple indeed! At a Governors' meeting held on 6th May 1976, the architects were instructed to design "the cheapest theatre which would be acceptable to the Governors and which would enable the Theatre Company to continue the operation which they have carried on so successfully for the last 25 years ... A target figure of £1.5m (at current 1976 prices including all fees) was mentioned".

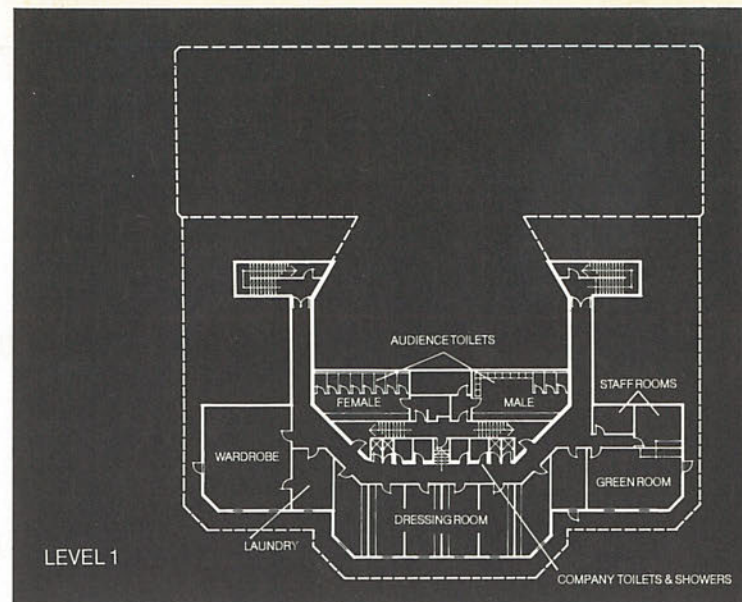
So, there it was, no frills, no architectural or technical extravaganzas, just a replacement for the old tired and worn out building at Knockendarroch. More or less the same seating capacity; same audience and technical facilities; same seasonal policy but — of course — a permanent building with all that that implies in terms of Building Regulations, Fire Regulations, Health and Safety at Work Regulations, Theatre Regulations, and all the other regulations regulating the regulations! Thus — *ipso facto* — it must be a different building and, we hope a better one.

The theatre has been positioned on the Port-na-Craig site — so to speak — against the fall of the land at the west end. At first it had been thought more economic to use this fall to form the rake of the auditorium, but the result was a poor view of the river for the patrons and a spreading out of the accommodation over a larger area. So now, the audience in the 540 seat single tier and fan shaped auditorium has its back to the river during the performance but gains immeasurably from stunning views from the upper and lower foyers, and from the restaurant, in the intervals.

The actors and staff have also benefited, for the dressing rooms, staff rooms, green room, wardrobe and laundry are directly beneath the main foyer and, in my opinion, must surely be the most beautifully positioned backstage area in Britain.

The fan shaped auditorium, facing what is in effect a proscenium stage (with loft), has two different rakes. The first seven rows are arranged as continental seating, whilst the rear eleven rows are at GLC minimum spacing and row lengths. Between the two is a wide cross-over gangway, allowing good access for wheelchairs and, because of this gangway, the rake of the rear section of the auditorium steepens behind it.

The side walls of the auditorium are penetrated by doors leading directly onto the cross-over gangway, whilst on the stage side of these doors the side walls start to turn in towards the stage itself but being constructed of panels set into steel framing act as 'masking' for three side lighting slots on each



side of the auditorium. The panels are faced with specially designed and painted scenery type 'flats' which, if desired, can be overhung with other scenic elements should a designer wish his/her setting to spread over the auditorium. Alternatively, during the winter closure period, the present panels can be removed and replaced with others intended to create a different mood in the auditorium for the following season.

The public enter the building from the east side, under a covered porch with draught lobby and thence into the entrance hall and main foyer which sweeps around the back of the auditorium in a semi-circle somewhat reminiscent of the old theatre. The entrance hall contains a box office, cloakroom and shop; the main foyer a coffee bar and licensed bar. From this foyer two staircases with surprising views of the river lead to the upper foyer and auditorium rear entrances. Here, at a stroke, the architect has enshrined the theatre's origins with two "tentpoles" and a ceiling evolving the original tent roof. Access to the auditorium can also be gained from the restaurant and coffee bar, or directly from the entrance hall. Patrons in wheelchairs have no steps to negotiate from the car park to the invalid toilets, to the foyer and bar or to their seating position in the very centre of the cross-over gangway. Surely Pitlochry must be the only theatre in Britain where invalids are seated slap bang in the middle of the auditorium?

The kitchen, serving the restaurant and coffee bar areas, has been designed to cope with up to 120 hot meals at a sitting, or 200 cold meals. It has its own entrance and outside areas for goods deliveries and rubbish disposal, discreetly hidden from public view, together with staff rooms and toilets and a catering manager's office.

The stage itself is set behind a simple proscenium arrangement, with a small curved and demountable forestage. Dimensions are given at the end of this article. After a great deal of discussion, the Pitlochry Festival Society decided against the provision of a fly tower. At that time the additional costs were estimated to be in the region of a further £250,000 for additional foundation works on a difficult site, extra height, much stronger roof section and steelwork, provision of a safety curtain and full sprinkler system. This last item would have meant special water tanks and pumps, etc. for there was not sufficient water pressure on that side of the river.

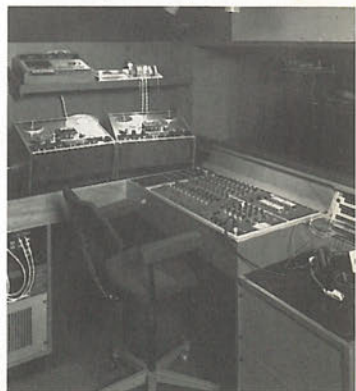
In the event, it is a theatre with NO fly tower but with a LOFT! Let no technician be mistaken about this. There is a grid and there are some counterweights as well as hand lines. It

is marginally better than the old theatre but it is NOT, like another well-known theatre in the land, one with half a fly tower! The distinction is subtle but positive! There being no safety curtain and no fly tower, the stage and auditorium are treated as one space — as at Knockendarroch — from the point of view of the Fire Officer, with the stage scenery and props being built from inherently flameproof materials. But there is nothing new in Pitlochry.

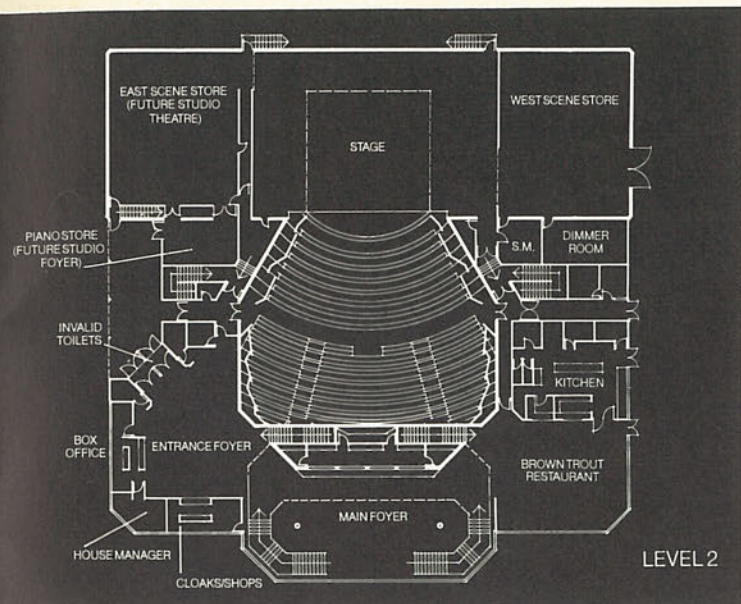
Acoustically, the design of the auditorium has been specifically for the spoken word. Whilst stage plays with music will undoubtedly be performed — to say nothing of musical Sunday Concerts — little concession has been made for music. The aim is to ensure that each member of the audience receives clear, intelligible speech from the stage.

While it was found that, during the final months of the building programme, there was sufficient money within the budget for a new lighting control to be installed, the control console is actually operating the five dimmer racks from the old theatre together with one new one. Likewise the sound system is a combination of old and new. A new 10/4 Mixer Desk is to be used in conjunction with existing record and tape decks, but the stage manager's control desk and intercommunication system are new.

The Society saved on all desirable but non-essential 'extras'. Apart from careful economy in the stage technical departments, it will use again much of the old backstage furniture as well as that from the restaurant at Knockendarroch. There will be no new acoustic shell for the Sunday concerts since the old concert backing will be re-used. For the time being the administration will remain in its present offices at Knockendarroch House, whilst the rest of the facilities in the old theatre will become a production unit for rehearsals, storage, and — as before



Sound by Rank Strand Sound



— the building of scenery and the making of costumes. The old dressing rooms will be used for long term storage of costumes and wigs; the old foyer for the storage of scenery and furniture.

Some items which proved too expensive now will — hopefully — be introduced into a second phase of the project. One of the most pressing will be the conversion of a scenery store on the East side of the new theatre stage, which has been deliberately designed so that one day it can become a studio theatre to seat about 150. It would then be possible to stage the normal seasonal repertoire on the main stage at the same time as a



Mike Smyth, Sales Manager Northern Light, the company who supplied the equipment

studio production in the "Studio". This area could also be used for late night and children's shows, small conferences, or exhibitions.

On 19th May 1981, exactly 30 years to the day after the first tent performance at Knockendarroch, a gala performance of "Storm in a Teacup" by James Bridie will officially launch the new Pitlochry Festival Theatre at Port-na-Craig. Coincidentally, the 19th of May 1966 was the date on that first "Wyckham Report"! I wonder whatever became of that summer stock company at Smugsbury-on-Sea?

And by the way — it may have taken 30 years to get it there, but this theatre was built on time and on cost!



Dressing Room, note the unusual rustic view

The Design Team

Architects: Law & Dunbar-Nasmith
Structural Engineers: Ove Arup & Partners, Scotland
Quantity Surveyors: Jas. D. Gibson & Simpson
Theatre Consultants: John Wyckham Associates
Services Consultant: John C. R. Pearce (John Wyckham Associates)
Acoustic Consultant: Frank Fahy (John Wyckham Associates)

Main Contractor

J. Fraser Construction Ltd.

Strand Group Involvement in the Project

Stage Engineering: Tele-Stage Associates

Stage Lighting: Rank Strand Duet 2 supplied and installed in special cabinet by Northern Light. Luminaires from old theatre plus new laniro groundrows.

Stage Sound: The theatre's own equipment, plus new.

Rank Strand Sound 10/4 mixer supplied and installed in special cabinet by Northern Light.

S.M. Control System: Manufactured and installed by Northern Light.

Technical Data

STAGE:
Proscenium: 10.45m wide by 6.2m maximum height to adjustable house border.

Width: Centre line to Stage Left Wall 10.8m.

Centre line to counterweight from on Stage Right 8.8m.

Depth: Rear of Tab zone to columns along the back wall 13.1m. Curved and demountable forestage 2.0m maximum.

Height: Stage to underside of grid 9.31m.

Stage to underside of loading gallery-cum-fly floor 7.64m.

Floor: Flat and level, covered in black linoleum.

Flying Systems: 11 sets, five line, single purchase counterweights.

Maximum bar load 250 kg. 19 sets of 5-line hems. All barrels are 13.5m long. House curtain (traverse) with fixed speed electric motor or hand winch in Prompt Corner.

Stage Manager: Working corner PS. Mobile control console with extension cables, etc.

Storage: Scene dock stage left, 140m², with adjustable racking and roller shutter entry to stage, plus additional door.

Scene dock stage right, 130m², (Phase II Studio) with — eventually — double shutters and sound lobby between it and the stage.
Get-in: Road level at scene dock, stage left. Roller Shutter at road level 3.38m wide by 4.98m high. Good lorry turning space and vans can be backed into scene dock.

ORCHESTRA

Accommodation: Forestage demountable to provide space for 5 players plus conductor with front row of Stalls removable to accommodate 24 players. Pit floor level 1.24m below stage level (max). No special Bandroom. Players will use dressing rooms.

ELECTRICAL

Lighting Control: Rank Strand Duet 2 in Control Suite above rear stalls with access from upper foyer or from stage via FOH lighting bridges and gangways.

Dimmers: 107 x 2kW (to 15 amp socket outlets) 13 x 5kW (to 32 amp sockets with change over facility to 4 x 15 amp).

Dimmer room at stage level (P.S.) through scene dock. 'Tip-spot' control installed.

Sound & Communication

Performance: 10/4 Rank Strand Sound Mixer Desk
 15 microphone inputs
 23 Loudspeaker outputs] in jack fields
 1 x Record Desk
 2 x Teac Tape Recorders
 2 x Cassette Players (1 in FOH for House Manager's use)
Stage Management: Northern Light Control console incorporating Pageing & Show Relay, Ring intercom, Cuelights, Digital Stop Watch, Bell & Pyrotechnic circuits, etc.

Artists' Accommodation

6 rooms accommodating 30 persons, below stage level (River views)
 Green Room
 4 Individual W.C.'s and 4 individual shower rooms.

Wardrobe

One large room of 63m² (River views)
 Large adjoining laundry room.

NORTHERN Light were delighted to be given the task of providing the production lighting, sound and communications equipment for the new Pitlochry Festival Theatre. Ever since the theatre opened, as Dr Ireland will tell you, they have always purchased the best technical equipment. A Strand Electric 'Sunset' board was installed for the first season and served until the mid sixties when it was replaced by a 120 way Luminous Preset Control.

When John Wyckham, the theatre consultant, first approached us in 1980 he explained that the brief was very simple. The budget was tight and as much equipment as possible was to be moved from the old theatre. My original instructions were to move the LP control and dimmers from the old theatre, provide a stage managers desk, incorporating some equipment already owned by the theatre, install a paging system and provide a termination box in the control room for the microphone and loudspeaker lines. Just enough in fact for the theatre to open with facilities no better than they had had before.

From our point of view the job has been unusual for two reasons. Firstly the theatre technical staff were available to advise on how the theatre would operate and to decide which

Pitlochry Festival Theatre

THE INSTALLATION STORY

by Mike Smyth

items of equipment they wished to take with them to the new theatre and those which they hoped and prayed wouldn't survive the journey to the new theatre's site at Port-na-Craig. Secondly, one often finds the brief for a new theatre contains a requirement for technical equipment which gets cut out when the money isn't available. At Pitlochry, we started with the absolute minimum but as more money became available additional equipment was added. One lesson I learnt was never to underestimate Dr Ireland as a fund raiser!

So, in the end the LP control was left behind in the old theatre and a new 120 way Duet with V.D.U., floppy disc unit and two pre-set manual desk has been installed. The old J.T.M. dimmers were upgraded by fitting the S.T.M. trigger cards and together with 20 new S.T.M. dimmers installed in the new dimmer room. A late addition, just before the theatre was handed over, was a riggers control. Not so much a luxury but almost a necessity in a theatre where one can

"stay six days and see six plays".

The Duet has been installed on a trolley unit so that it can be moved over beside the sound control and for a simple show one man can operate both sound and lighting, whilst the 'chief' makes the 100yd journey to the Tummel with a fishing rod presumably!!

The majority of the lanterns are from the old theatre, having been thoroughly overhauled by the staff, but a new Pallas groundrow has been provided.

The sound control has grown from a termination unit only to a new sound desk incorporating a jackfield, Strand Sound 10:4 mixer, loudspeaker switching panel and patch field and a new stereo amplifier. The desk was designed to incorporate two mono amplifiers, two Teac tape decks and a cassette machine from the old theatre. The mixer has built in monitor amps and new monitor speakers have been provided.

The prompt desk is again a mixture of old and new. The old ring intercom system has been used, modified to

operate on a twin ring. A new 8 way cue light system has been provided as well as two effects bell circuits, a telephone ringing circuit, a pyrotechnics circuit, a digital stopwatch and paging facilities for F.O.H. and backstage.

The stage doorkeeper and F.O.H. manager also have access to the paging system and the F.O.H. manager has a cassette machine to play music in the foyers during the day.

Northern Light have also manufactured to John Wyckham's design, a prompt corner working lights control panel which controls all working lights, performance lights, rehearsal lights and cleaners lights. The panel also has a duplicate house light control, the tabs controls and a clock. We were particularly pleased to have manufactured the production lighting socket outlet boxes for the electrical contractors, James Scott & Co Ltd. Many theatres have poorly made and inadequately labelled boxes which must make life difficult for the electricians. Northern Light manufacture all their boxes with a terminal block on the base so that all the hard wiring can be terminated without the lid being fitted. The lid can be fitted and the cable loom connected when the site is clean and damage is unlikely to be caused.

WHEN writing about the Technical Thirties to celebrate the 100th anniversary of *The Stage* in January last year, I found that I was writing more about the cinema than the theatre and this is a splendid opportunity to take that story further in Strand's own magazine *TABS*. Indeed it is not too much to say that but for the cinema Strand Electric would have died there and then. And this in spite of the fact that the firm was run by two ex-theatre electricians, Arthur Earnshaw and Phillip Sheridan, both of whom had excellent contact with theatre people — in particular, the most famous impresario of the time, C. B. Cochran.

Cinemas between the wars were of two main classes: the 'flea pit' — not necessarily so populated — and the super cinema. The first seated a couple of hundred or so and one walked in straight off the street and in one familiar to me it was possible to hear the trams stopping outside above the piano or tiny band. Films were of course silent then. Although they all liked to call themselves Picture Palaces this title could only be applied to the second. For most of them it was exactly appropriate. People who only know the post war cinema can have no conception of what they were like in style and staffing. This breed which arose in the twenties was going all out in the early thirties. It is about the lighting in these super cinemas that I want to write. It is the world in which I began to work way back in 1929 and it is no coincidence that my first switchboard should be exactly like a cinema organ — it was intended for cinemas not theatres!

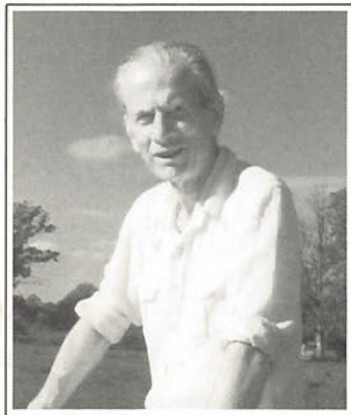
In the thirties, cinemas constituted the destination for the majority of the stage lighting equipment Strand manufactured. However, a digression is necessary to explain the position in the 'legit' theatre for it must not be imagined that there was no exciting lighting done there. The truth is that people were very ingenious in their use of limited resources. House boards were ancient indeed and mainly relied on tracker-wire operated liquid dimmers and knife switches mounted on open slate panels. The supply was D.C. on an arrangement known as "3-wire". Across the outers the voltage could be 200 and this gave 100v between the middle or neutral wire and an outer for lamps. This low voltage does explain how Basil Dean and Gilbert Miller were able to import and use 400W projector lamps from the States in the twenties. None of that pairs in parallel business we had to use for *Blitz* in 1962!

Voltages were very inconvenient for touring. There could also be D.C. 200/400 and before long A.C. 3-phase, thanks to the Grid, but which idiotically did not settle for a standard voltage from the start. Two sets of lamps, at least, had to be carted around. Some of the old installations in theatres survived a deuce of a time. A photograph of the Drury Lane intake in use as late as 1949 tells its own story. Where the supply company insisted on a change-over to A.C. they paid for a modern board (i.e. Grand Master) but it was up to the theatre owner to spring the extra if he wanted more dimmer ways but since he was unlikely to be backing the incoming show its management had to rely on portables hired to cover anything beyond basic lighting.

Portables must not be seen in the sophisticated terms applicable today.

FAMOUS STRAND JOBS OF THE PAST, OR I WAS THERE!

by Frederick Bentham



The author was in charge of Strand Electric research and development from 1932 to 1968, and was the longest serving Editor of TABS, only relinquishing the chair in 1973.

He is the author of the standard British work on stage lighting originally published in 1950, and many editions and

revisions since, and still in print.

He is currently editor of "Sightline", the A.B.T.T. Journal.

He is a Fellow of C.I.B.S. (formerly I.E.S.), Past Chairman of the A.B.T.T., Past Master of the Art Workers Guild, Hon. Member of the Society of British Theatre Designers, Hon. Member of the Society of Television Lighting Directors and Member of the Society of Theatre Consultants.

The majority of the photographs accompanying this article are supplied from the archive of the Cinema Theatre Association, an organisation devoted to the appreciation of cinema equipment and architecture. (The Editor is member no.7!)

Other photographs were kindly loaned by the Tony Moss Collection.

Something lightweight like *Duet* would have seemed more improbable than putting a man on the moon. After all both H. G. Wells and Jules Verne had told us a way of doing this whereas we hadn't even begun to write about theatre portability in such terms! What we could do was limited to mounting six or twelve dimmers together to form a heavy unit with the crudest of mechanical mastering. The fact that a collection of such 'portables' sufficed for 'legit' productions must not be taken automatically to imply a low standard of lighting. After all, the career of Joe Davis as a lighting designer — the doyen of that craft —

really began at this time. There was plenty of labour about and lighting rehearsals could and did go on a long time — overnights were usual.

Super cinemas, with but few exceptions, went in for a weekly change of programme and as in those days there was an orchestra to rehearse, time available on Monday morning was presumably very restricted. The house had to open up in time for a 2 o'clock start. Continuous performance was the rule, members of the audience joining and leaving at any time. Except for this the cinema can be regarded as the successor to the music hall — somewhere to go each week. In fact until the

Talkies came the two managed to exist side by side. A complete programme had to last three hours and although there were two feature films — incidentally the 'second' feature came first — they were short in today's terms, just over an hour perhaps. Even with a cartoon film (*Felix, Mutt & Jeff*, or *Bonzo*) and the newsreel there was a lot of time to fill. No interminable advertising films in those civilized days.

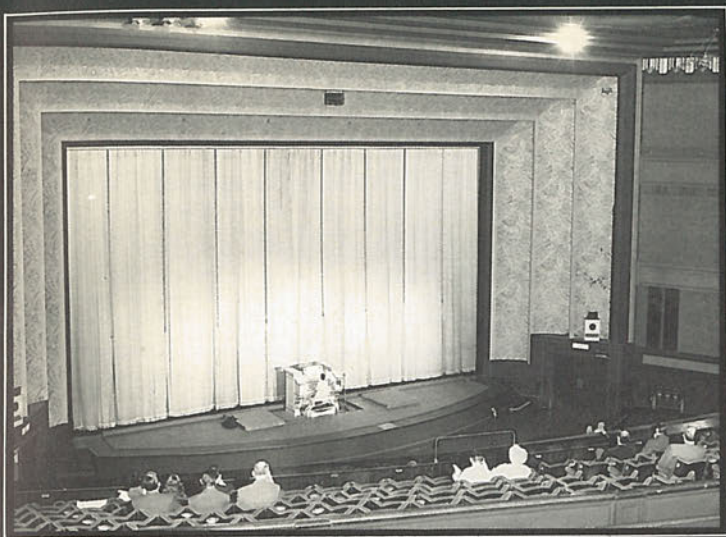
Variety acts like Bransby Williams, Layton & Johnstone, Flotsam & Jetsam or the big bands, Jack Hylton's for example, would be staged. Where the screen could be flown out there was no problem with a standing set; nevertheless in the main, drapes were used in conjunction with some built pieces maybe; pushed on at the last minute, if necessary. The important role for the stage lighting was to get the most out of what were virtually the same sets of drapes each week and in consequence as comprehensive an installation as possible was a *sine qua non*. When looking back and judging such an installation its effectiveness for lighting curtains must be the first consideration. Hence the green circuit in the battens and floats, the others being red, blue and white. In a music hall the fourth, when provided, would be amber, not green.

Green was required not so much for its own beauty (though it could claim the merit of making any curtain look different!) but as the third primary for colour mixing. Indeed, in spite of the fact that there were already four greens in the gelatine range the first colour that I added was another; No.39 to get the true primary. It would be nice to know exactly who first got hold of the Young-Helmholtz theories of colour vision and applied them to stage lighting. The German Schwabe system used seven colours and Adrian Samoiloff, who was responsible for Strand Electric adopting compartment battens in the early twenties, was concerned with complementary colours to turn blacks into whites and so forth — not with the mixing of colours, very much the reverse.

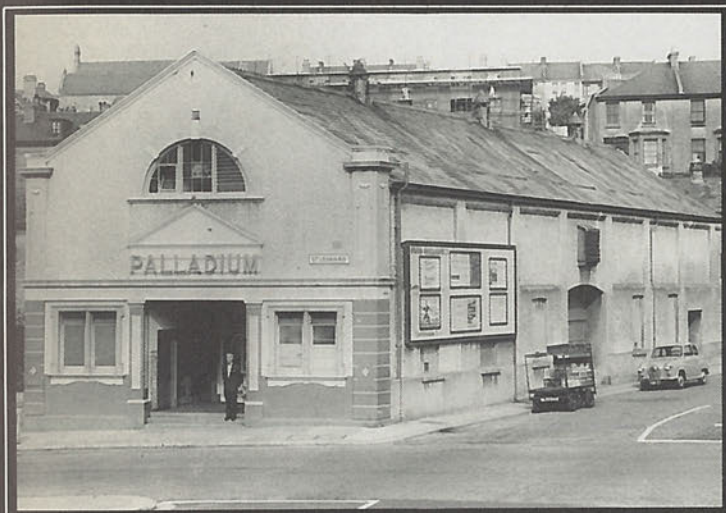
People today cannot imagine what a mania this colour mixing was in the twenties and thirties. Everywhere one went, outside theatre proper, the colours were slowly changing — a sort of visual background music; even on the curtains behind the band at Bertram Mills' Olympia Circus. In the super cinemas these effects invaded the auditorium, no matter how unsuitable it was architecturally. The Roman architecture of Frank Verity's Shepherds Bush Pavilion (a 3000 seater of 1923) opened with these changes going on behind cornices, laylights and in the decorative fittings. Even the flambeaux torch brackets included blue and green in their flaming repertoire! The most outstanding cinema architecturally to be specifically designed to exploit colour changes was probably the New Victoria. It is still there but minus these effects and the giant 'seaweed' fittings which also changed colour in this Neptune's palace.

The mixing of the auditorium colours was sometimes delegated to automatic dimmers — a Strand example was Robert Cromie's Regal Kingston — but the discerning realised that a machine could not be allowed to ramble on while the organist played, so manual control had its points. The trou-

Continued Overleaf:



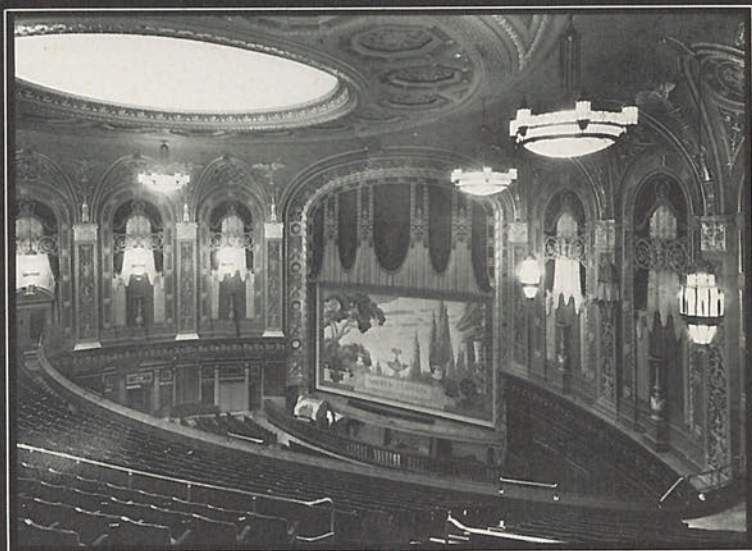
▲ The scene of the trouble with Napoleon's horse! The Regal Edmonton.
Photo Tony Moss Collection



▲ Perhaps Fred Bentham's description of smaller pre-war cinemas as "flea-pits" is a little hard. This delightful photo shows an example of the more humble neighbourhood show which has almost vanished. The smart manager seems to rebuff any thought of flea pits, just by his mein and appearance.
Photo Cinema Theatre Association Archive



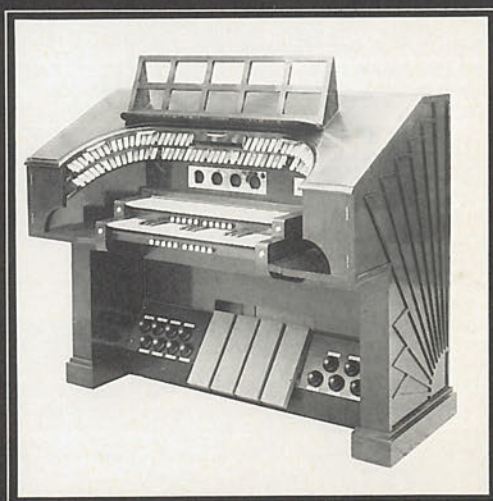
▲ A marvellous pre-war shot of a Super at its best. This particular example shows the main foyer of the Troxy, Commercial Road, Stepney. Regrettably this wonderful building, although still standing is now a storehouse for operatic scenery! Admire, dear reader, those wonderful uniforms.
Photo Cinema Theatre Association Archive



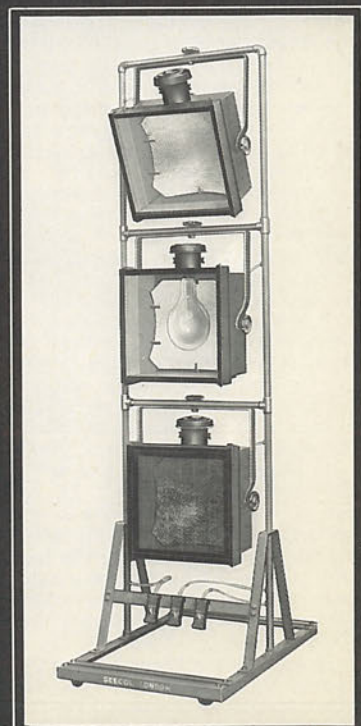
▲ The ultimate London super cinema — the Trocadero, Elephant & Castle. The great George Coles at his finest. Every time I read of some new provincial rep taking ten years to design and two to build, I can't help remembering that our own Odeon circuit, throughout the thirties, averaged four openings per WEEK!
Photo Cinema Theatre Association Archive



◀ The original inspiration of our author's Light Console, a pre-war cinema organ. This particular instrument, featuring a typically thirties 'sun-burst' music rest, was at the Odeon Astoria, Southend-on-Sea.
Photo Tony Moss Collection



▲ The Strand Light Console. The true beginning of unified, manageable lighting control. A line that directly leads to the Galaxy of to-day.
Photo: F. P. Bentham Collection



▲ A pre-war Strand flood tower ▶

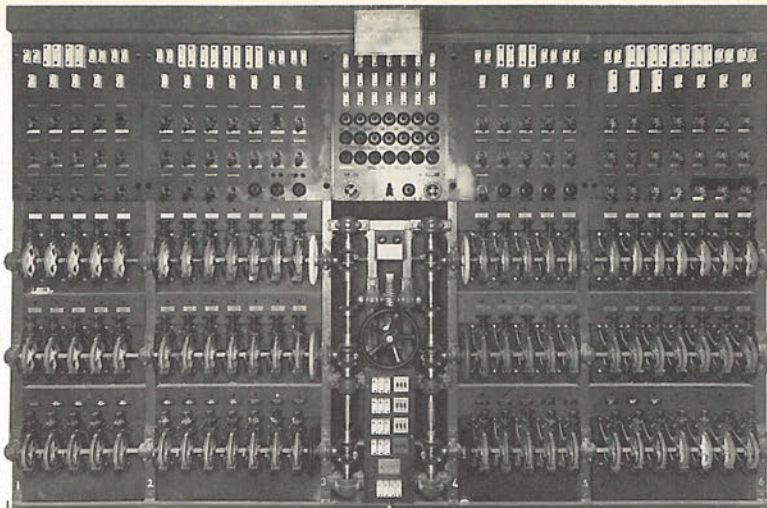
ble was that most operators had neither an eye for colour nor an ear for music. To cope with the first problem a certain R. Gillespie Williams of Holophane, who was later to become Rollo G. Williams when he joined Century Lighting in New York, invented an automatic means for mixing the three primaries. Known as a Colour Selector (and Delicolour in a post-war variant sold by Furse for a little while) you put the pointer to Apple Green or whatever and the machine did the rest.

However, I must not get led off down that diverting track. What could one expect to find in a super cinema belonging to one of the big circuits in the early thirties? Well, the first thing you could bet on was that in a new Gaumont-British house it would be Strand and in a Paramount it would be Major. What about Rank it may be asked? The answer is that Odeon cinemas did not really make their impact until after 1935. They do not belong to this particular story. An interesting circuit which does is H&G (Hyams & Gale) Cinemas. Mick Hyams, the son, had a flair for stage presentation and he saw to it that his seniors spent money in a suitably lavish manner. A famous house of theirs was the Trocadero Elephant & Castle (1930) and they went on to build the Troxy Commercial Road (1933) — now the London Opera Centre, the Trocette and in 1937 the Gaumont State Kilburn, as it became known. The architect for all these was George Coles and anyone who knew his style could see that writ large all over them. These houses had a lot of stage machinery — the Troxy had three revolves side by side — and all had revolving-battens. This was a motorised gimmick in which a framework allowed one to have the usual alternation of colour circuits or to have all circuits in each of the three colours. The best use of these was to set them all a-revolving as a grand finale!

However, the house I want to describe in detail is the Regal Edmonton built for A. E. Abrahams. The architect was Clifford Aish, who had done the luxurious Regal Marble Arch for the same master, but here the auditorium was nothing very exciting, it was the stage. This was quite remarkable having a depth of 46ft and a pros. opening of 56ft wide and 32ft high. There was a full grid with counterweights over all. A 39ft revolve had four lifts in it each rising 5ft and sinking twelve. There were two sets of house tabs, one of which rose and fell while the other traversed on and off. There were screen tabs as well and all three were motorised to work both from projection room and prompt corner. At the rear of the stage was a large permanent plaster cyc with curved ends and a pit which housed double row ground-draws. The top was lit by a double batten of 12 inch square compartments with 500W G/S lamps.

Needless to say, in accordance with the mania of the time, all this was in the three primary colours — 6 red, 39 green and 20 deep blue (double circuit). There were four 4-colour battens and between the 6ft sections of each, five pre-Patt 56 acting areas — twenty in all but only 8 dimmers for them. This was an *inept* copy by Strand of a German lantern. When our own Patt 56 was completed in 1935 it literally gave ten times more light for the same watts. There were three 2000W triple floods each side and an illuminated walkway round the orchestra pit which had separate lifts for the band and the organ console. Add to this an elaborate 3-colour triple proscenium of which more anon and the reader will begin to wonder where the spots were? The answer must be: where indeed!

Leaving follow-spots on one side for the moment, there were only twelve spots mounted slap in the centre of the balcony front. And it was 'in' — no



Engineering in the age of grandeur! Although our author disparages the ergonomics!
Photo: F. P. Bentham Collection

hanging in full view in those days. The twelve had remote solenoid change (4-colours and white) but Mirror (profile) spots had not come into use over here so these were only 1kW focus lamps with 6 x 10 inch PC lenses (Patt 43A for the archivist) and the light they emitted would be considered negligible in today's terms. To get some light out of them they had been fitted with A1 tubular bulbs (22 L/W instead of 16 L/W in the case of the B1) but this led to a snag for the G.E.C. The intention was that Osram lamps should be used throughout. This was implicit in the provision of a free specification and supervision by their Theatre Consulting Engineers Department under Basil Davis MIEE. These twelve lamps were Philips and could have represented a blot on the usual 'Everything Electrical' advertising claim of those distant Hugo Hirst decades. And it was I who had smuggled those contraband lamps in! My own role was peculiar. Two years earlier I had been Basil Davis's personal assistant at G.E.C. and since joining Strand, to look after the hire showroom and demonstration theatre, had put myself in charge of their R&D Department as well. This was not difficult as it did not exist!

The stage lighting at Edmonton was by Strand throughout and L. G. Applebee (a famous name in the annals of the firm) put the problem to me at the same time as my ex-chief did. The light from the balcony spots sloped over onto the cyc due to the very shallow angle. Today one would simply move the bottom shutter. It was my work with various makes of A1 lamp, for what was to become the Patt 73, which provided the answer. The Philips filaments were compact squares whereas the Osram, Mazda and the rest of the ELMA ring (no Thorn then!) were taller than they were wide. What was projected on this throw was, of course, an enlarged image of the filament; its shape and compactness was all important therefore.

Needless to say, as in the music hall, arcs were relied upon to pick out any acts or a band leader or his crooner or whatever. I think there were two 80-amp in the 'dome' and two in the projection room but these would have been supplied by Frank Brockliss whose installation would have included a couple of Brenographs. Each of the latter could produce a couple of extra spots of a sort if needed. The Brenograph symbolised the well-equipped projection room of the day; though it was seldom called upon to perform more than a few of the many optical tricks claimed for it! It consisted of a framework carrying what were virtually two optical benches one above the other. Each had an arc lamp-house and a series of optical mounts, all of which could slide to and fro.

Slides, gobos, chromotrópes, clouds and other effects were projected and blended on screen or house tabs during organ interludes and the like. However, at Edmonton, the triple 3-colour pros. arch was more likely to be used for this.

Three frames were set one inside the other and had to be lit, as nearly everything was then, from behind the edges of each cove. The plasterwork was in a lacework pattern, pierced and gauzed over in one area to allow the organ to speak through it. Usually china-sprayed lamps were used to get the colours and diffusion at such close range but here compartment equipment and colour filters were used. In this case the compartments ran side by side instead of alternating as in the usual stage battens and float. By the way, there was a float but mounted on a lift so that it could disappear. The Strand footlight for this work was the A1, rather more expensive than the then standard B type. It was very compact and had very deep silvered-glass reflector cupped round the lamps — all reflectors used by Strand were of this material and went under the trade name of *Sunray*. The break-up surface was a patent of Robinson King who made it exclusively for us.

How did all this work in practice? Although I stood by at the grand opening (in white tie and tails of immense length) not the faintest memory of any film comes to mind. At rehearsal Napoleon's horse, supplied by "Chapmans' Tottenham Court Road" according to the programme, rising on one of the stage lifts showed every sign of making a premature retreat, so Boney had to do without on the night. The Strand flames and clouds on the cyclorama did their stuff behind a silhouette of Moscow. All of which should make it superfluous to name the composition that the orchestra and organ were bashing out. The stage lighting was operated from the very same 72-way Grand Master whose photograph appears on this page. Apart from the usual cinema location at stage level prompt side, which made it difficult to see what one was doing, the layout of the dimmer handles was confusing. Nothing came logically together under the hands. One reason was the problem of sharing four colours over six shafts and the other was the stern discipline of 3-phasing. Thus the colour shafts were the top two on the left and the right of the master wheel and gearing. Each ran from the left: Dips Centre, Dips OP, Dips P, Batt 4, Batt 2, Batt 3, Cyc Left, Cyc Right, Cyc Centre, Cyc Pit, Batt 1 and Float. Imagine what it was like trying to mix the red, green and two blues of the cyc with any degree of finesse. The bottom shafts had the odds and ends like the

circle spots as three circuits, the acting-areas and so forth. The solenoid colour change was right down on the floor below the master wheel. It might be thought that the operation of the lighting was not all that important but it was. The visual side of the show depended on almost continual colour changes. If memory serves, the electrician was the late Charlie Passmore whose name was to become well-known in the world of *Son et Lumière*.

The proscenium covens were operated from a board in the projection room out-front. This was a pioneering one-off which is part of the saga of remote position control of dimmers but that is another story. Another memory echoing over space and time is: "Don't forget the piano cable." It was the super cinema not the theatre which pioneered new technical equipment. The voice came over the backstage speakers and was that of Dave Abrahams (another of those sons!) seated at the sound control and rehearsal station out among the first night audience, four rows above the cross-gangway in the circle. From there every show was monitored and talked through — and this in 1934! Standing in the wings I was watching the grand piano on which Sydney Torch had just played a duet with himself from the organ console in the pit. This was possible because one of the stops on this theatre organ connected a full sized grand piano to one of the keyboards. The piano itself could be moved on-stage from its usual place in the wings. The electro-pneumatic remote action relied on multi-core flexible cable which could be unplugged. Anyway, the house tabs had shut and the piano was being struck by using one of the stage lifts. At the very moment when I was wondering whether the cable really had been slackened off enough, over came the warning. Dave was a real professional for he could not see what was going on.

At a time long before it was permissible to suck your mike in public and when the London Palladium still had (and was to continue to have for many years yet) the mike stuck on a rigid bit of pipe downstage centre in continuous view — a cinema stage like the Gaumont State Kilburn had a large installation of mikes to pop up from mini star-traps here, there and everywhere at the behest of the man in the wings. But, I am no sound man and Strand didn't do that kind of sound in those distant days. My line was, as ever, colour and music. How did that fare at the Regal Edmonton?

Not very well, has to be the answer. With the pros. arch lights on the projection room board and the stage lighting on the backstage Grand Master plus the organist looking after, when he had a finger free, the illuminated greenhouse encasing his console the result was chromatic chaos. Still, they did get the triple arch into Red, White and Blue as the strains of the Marseillaise trumpeted out their 1812 coda, so the entente did manage to become cordiale in the end!

'SIGHTLINE'

A REMINDER FROM THE A.B.T.T.
The ABTT's journal *Sightline* for 1978-80 is now available as a bound volume. Edited by Fred Bentham, this A5 well-illustrated hardback of nearly 400 pages with full index is a must for any technical theatre archive or reference shelf. Obtainable from ABTT 4 Great Pulteney Street, London W1R 3DF at £12.50 post free in the U.K.

A FAMOUS opera singer appearing at La Scala was greeted after her performance with numerous shouts of 'encore, encore'. Eventually she could sing no more and tried to leave the stage with more shouts of 'encore' in her ears. Finally someone disillusioned her, 'You will sing until you get it right!'

I have been having an experience that has reminded me of this story. Normally a lighting designer is asked to do a show just once but in the last year I have lit a production seven times, and there is another production lined up. This has provided me with a unique opportunity to assess what works and what doesn't.

The story starts last year when I was asked to light 'Song of the Lion', a one man play about the writer C. S. Lewis starring Hugh Manning. The show was to preview in London before touring and returning to London again. Tour lighting is full of pitfalls. No two dates have the same equipment or the same lighting positions, hence angles of light change. Some operators are better than others, even counting memory switchboards, there are ways, even of pushing buttons! Finally the lighting is in the hands of the Company Manager, whose task it is to reproduce each week the lighting designer's original creation. This role is usually taken by a stage manager wearing an administrative overcoat, the lighting that results is rarely inspiring if good intentioned. Time is seldom on their side since get-in, fit-up, focus, light and performance are usually on the same day.

It is the lighting designers job to get as much information from each date as possible and plan the tour accordingly. For example, a tour which I am doing at the moment is visiting theatres with a variety of control desks, some 140 ways, 100 ways and 80 ways but also a lot at 40 ways. It is not possible to hire extra ways so the tour is planned around a 40 way system so that it should always stay the same. Otherwise if I got carried away in a 140 way date the company manager would have an impossible task later on. Tour lighting design therefore has constraints from this direction and of course constraints from the show itself. It is the consideration of these two elements that shapes the plan.

'Song' was to be directed by David William with whom I had just worked on a production of Benjamin Britten's opera 'A Midsummer Night's Dream'. We both felt the same way about lighting, that it should constantly move and subtly affects mood and emphasis. Dream had 130 cues and it seemed likely that 'Song' would not be dissimilar. But for 'Dream' I had the excellent Duet memory system so cues were no problem and the gentleness of fade times could be recorded but the dates for 'Song' had no such system. Nevertheless we felt it was essential to stick to our approach so that the actor, alone on stage, would receive great assistance from the lighting by generating the right mood and ensuring he was always the focus of attention. Another problem was that the dates varied widely in lighting positions, some had no flying facilities for overhead bars, others had limited front-of-house positions. I therefore decided to solve all of these problems by touring our own complete system, dimmers, board, lights, rigging and operator.

In some dates we were limited by power so the show had to be designed with this in mind. Some dates had a single connection point for power, others had a variety of socket outlets. With the aid of Theatre

"ONCE MORE WITH FEELING"

by Graham Walne *Graham Walne combines a career as managing director of Leisurplan Theatre Consultants with work as a designer and author. He has designed the lighting for nearly 300 productions which includes*



nine royal galas and seasons for the Royal Academy of Dramatic Art and the Royal Academy of Music. His first book 'Sound for Theatres' will be published this autumn.

Projects Hire Department we rigged a connection system with a variety of plugs and leads so that the dimmers would plug in at each date without laborious work with screwdrivers. The control system was perfect for this tour, a 30 way two preset Mini-2, lots of power but small enough to fit into the tightest prompt corner and flexible enough to be powered from a single or multiple sources. Because of space limitations on some dates, the lights were hung from four booms which were self supporting, two being positioned front-of-house and two backstage in the downstage corners. Since the relationship of each to the stage would change each week I chose spots with variable beam angles, profiles FOH like the T84 and fresnels backstage like the 803. This way the focusing could be constant just by adjusting the spotlight relative to the throw at each theatre.

This was vital since all the spots were set very tight, head and shoulders in some cases. Hugh Manning's TV experience meant that he was accustomed to precise positioning and he always found his light even in the tightest of areas.

The set was a timber panelled room which could serve as Lewis's house, study or schoolroom. It had been stained in a variety of colours so that although it appeared to be fairly sombre, it masked a range of

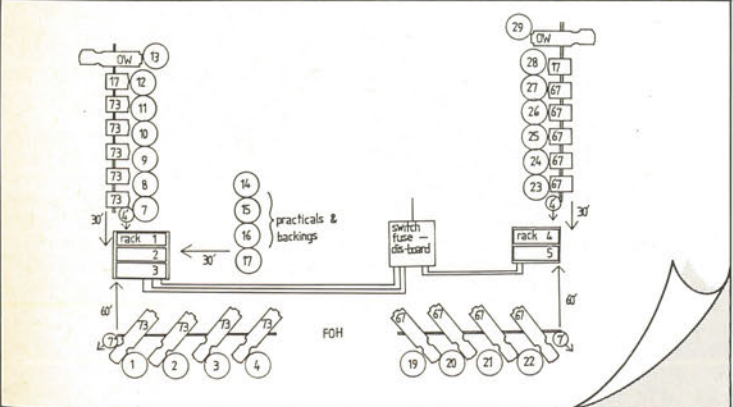
tints which the lights picked up. The choice of colour filter was therefore hard if the gentleness of blues was not to seem vivid Disney or the gentleness of roses not to seem too hot. The Cinemoid range was very useful here with its very wide range of gentle tints, the new 73 pale straw being especially useful alongside the venerable 51 gold. As a dimmer is checked down the filament emits more red light which kills the blueness of filters. The result can be a grey light. The gentle blues 67 and 69 were especially useful to cool the light without being too romantic, in some cases several thicknesses were used.

The rig was erected first in London at rehearsal and the show was lit as it ran with me sitting at the desk in the stalls and the operators writing down the plot by my side. This way the lighting was played with the feel and movement of each scene and in the end we had 90 cues. It then went out on tour and since the same lamps were plugged into the same dimmers each week the plot stayed the same. After the tour the show came back into London and since the theatre was well equipped we dispensed with the tour rig. The positions of the backstage booms on tour had generated very crisp crosslight which was softened by the FOH booms as fill. For London I wanted to add backlight and soften the harshness of the crosslight angle so I added a conventional number 1 bar, backlight bar and FOH bar. Naturally it did not look the same and in fact at first it didn't look good at all. It had lost the tightness and attack, the crispness of the tour and much of the chiaroscuro, the balance of light and dark, had gone. So we put back the emphasis on crosslight by adding backstage booms again comprising six 743's each side, tight focus for maximum punch. The FOH bar and number 1 bar were checked and once again the show came to life.

The moral here is that one shouldn't be tempted to use more equipment just because it is available. One of the best advertising men had a sign over his desk which just said KISS — it stood for Keep It Simple Stupid! It works for stage lighting too. This lesson was valuable when the show returned for another London season, this time sharing the theatre with another production lit by Dick Bloxside. Although 'Song' was complex, Dick's show was more so and therefore we returned to the kind of rig and positions we knew had worked on tour.

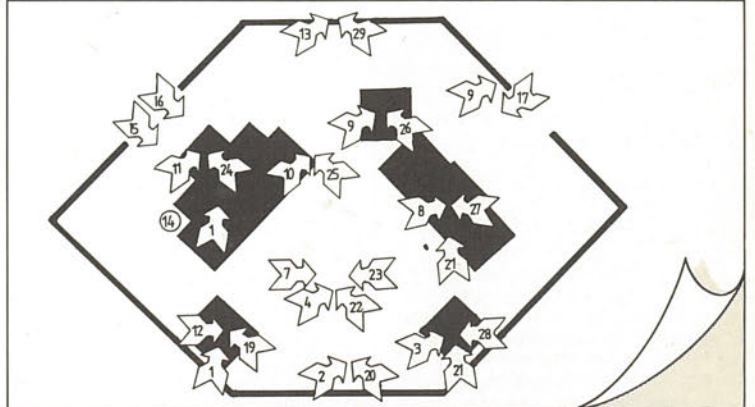
One of the nice things about doing a complex show is that it is always growing. As a result it never becomes repetitive to light, new cues are added and old ones combined or discarded — in fact the current total is around 60. The show returned for another season earlier this year and comes back again in June. This means that I get an opportunity to try out new ideas in order to deal with things that are less successful than others. Sometimes it is necessary to return to an old idea which worked but happened by accident whereas the carefully chosen idea didn't. All the time one must remember that it is the end result that is important, the methods must not be allowed to assume an identity of their own.

I started this article by talking about getting it right. Lighting is never 'right' because it is subjective. 'Song' will grow each time we do it although with time we must find the most suitable locations for the most suitable lamps. The rig therefore evolves and finally settles but colour and balance will be different each time. I have learned from this that some of the most effective lighting was also the simplest. KISS, KISS!!



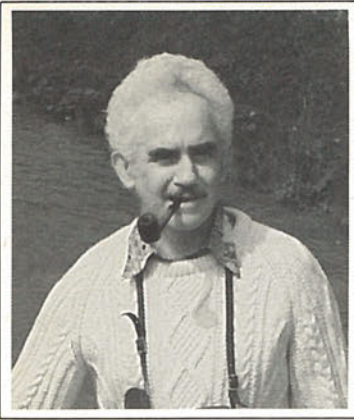
TOUR RIG DRAWING

This is a scale drawing of the information needed to erect and wire the equipment. Each symbol represents a different kind of light with the number inside the shape being the Cinemoid colour number and that outside in the circle being the dimmer number. The 30ft and 60ft markings are instructions to leave that amount of cabling from the bottom of the boom to the dimmer rack and the 4ft and 7ft markings indicate the height of the bottom spotlight from the floor. This drawing is essentially produced for the benefit of the electrician and contrasts with the next one which is essentially for the lighting designer for use when actually plotting the cues, although some people do work from the rig plan.



FOCUS DRAWING

I find it easier to produce this kind of drawing once the rig is working and to use this when plotting the cues. This is a schematic of the set, with the dark shapes representing furniture, and the arrows drawn on to indicate the angle of each light and its dimmer number. Thus it is very clear that the downstage right chair is lit by dimmers 12, 1 and 19. Some lights are at a very shallow angle and so they spill over onto other areas, thus dimmer 1 hits the chair we have just mentioned but is also focused on the sofa and table behind. The same thing happens with a number of lights here but most have been omitted to keep the plan simple, another example is dimmer number 9 which is focused on upstage left desk and upstage left door.



by Alan Horne

Alan Horne left King Henry VIII Grammar School, Coventry in 1952 to spend two most enjoyable years National Service in the RAF, engaged mostly in flying training in Canada. On returning to England, found that the National Airlines were less able than the RAF to recognise a born flyer, so reluctantly entered the world of commerce, (bank clerk).

Disillusionment after one year coincided with a large exodus of staff from the BBC in 1955 when ITV started. Became part of the intake of new staff into the BBC.

Subsequent career has been spent in the London studios, first on camera crews becoming senior cameraman in 1965. Started lighting as Technical Manager in 1968.

Has worked on all types of production with a bias towards drama. Series have included 'Wings, Secret Army, Rebecca' and recent single plays — 'Jail Diary of Albie Sachs, Bavarian Night, and Unity Mitford'.

I WAS interested to read in the December 1980 issue of TABS that it was within the walls of the old King Street offices of Strand that the A.B.T.T. was born. Some 13 years after that event, in the same premises, the Society of Television Lighting Directors first saw the light of day.

On the 30th October 1974 to be precise, television lighting directors from all parts of the country attended an inaugural meeting in the Strand Electric theatre in King Street at the invitation of a small group of enthusiasts who had formed a steering committee.

That meeting is well remembered not only as the Society's inaugural meeting, but for an eleventh hour counter proposal in favour of the formation of a television lighting section of the Royal Photographic Society. This however was overwhelmingly defeated and the independent Society of Television Lighting Directors was created.

So what is the Society and what are its aims and aspirations? Let me quote from the objectives established at that inaugural meeting.

To provide a forum that stimulates a free exchange of ideas in all aspects of the television profession.

To promote discussion on techni-

ques and on the use and design of new equipment.

To organise professional and social events throughout Great Britain and abroad.

To publish technical information, news and articles in a regular newsletter.

To have no union or political affiliations.

MEMBERSHIP

Full membership is open to those who are or have been actively engaged in the direction and design of the creative aspect of television lighting.

There is an associate membership for those whose occupation is directly associated with the creative aspect of television lighting, and companies associated with the television industry are invited to become sponsor members.

lively discussion.

This first meeting was important in that it established for the future a style and quality of debate, and the opportunity for a social gathering of lighting directors and other professionals from the BBC and Independent Television Companies throughout the U.K.

Other subjects debated and venues in that inaugural year were 'Light-weight Cameras' at the BBC Pebble Mill Studios, Birmingham (our first regional meeting), a visit to Rank Strand to see the lighting console designed for the National Theatre, and 'Lighting and Design for Light Entertainment' at ATV Studios, Boreham Wood, Herts. At all these meetings, the debate was enriched by the presence of invited guests from associated professions and industry both as speakers and participating audience.

To conclude an already successful inaugural year, seventy society

commitment to hold regular regional meetings. Consequently meetings have been held at Birmingham, Norwich, Cardiff and Manchester, and on each occasion a large group of London and regional lighting directors have travelled to the venue to provide support.

Subjects for debate at other meetings down the years have included 'Costume and Design', 'Softlight and Diffusion', 'Digital Special Effects' and whether directors should have a free choice of creative staff for their productions. Venues for meetings have been generously provided by the Independent Television Companies and the BBC both in London and in the regions, and by some of our sponsor member companies. Continuing the example set at the first meeting, there is the added inducement at each meeting of a splendid buffet meal and liquid refreshment.

Society of TELEVISION LIGHTING DIRECTORS

There was an immediate and enthusiastic response to the creation of the S.T.L.D. such that within the first year full membership had risen almost to saturation point in the U.K. (an estimated 200 television lighting directors at that time). Associate membership, limited by the rules to two thirds of the full membership, had kept pace. There was also considerable interest generated world wide, and applications were accepted from television lighting directors in Canada, Ireland, France, Italy, New Zealand, Australia, Norway, Sweden, U.S.A. etc.

MEETINGS

The first meeting was held at Rank Strand's King Street premises on the 29th January 1975. 93 members and guests assembled first to meet old and new colleagues and consume a first class meal, then to debate the subject "Should writers have a visual imagination in television terms?"

An expert panel — Jack Russel representing writers, Brian Rawlinson script editor and actor, and Herbie Wise, director/producer opened the meeting with their own personal observations. Then the audience which included many well-known directors, producers, designers etc. joined in a

members flew to Rome for a long weekend to visit the Ianiro factory. They participated in a most enjoyable programme of events including a visit to the R.A.I. television studios, a tour of the city, and an introduction for many to the delights of Italian cuisine.

In recent years we have sought to widen the interest of our meetings by making contact with other professional bodies. In March 1977 we met members of the Association of Feature Film Directors of Photography to talk about and demonstrate differences in technique and operation. In April 1978, Society members and guests attended a matinee performance of the 'Cherry Orchard' at the National Theatre, and later met the lighting director and designer of the production together with members of the Guild of Theatre Designers to talk about the vast difference in techniques between theatre and television lighting.

More recently, in January of this year there was a combined meeting with members of the British Society of Cinematographers.

REGIONAL MEETINGS

We have always been conscious of the problems that our regional members face in attending meetings, and we have adhered to an original

In the six and a half years of the STLD's existence, membership has grown to nearly 400 and international interest continues to increase with further applications arriving, during 1980, from Australia, Denmark, Holland, Sweden and the Transvaal. This diversity of input into the society's affairs is most welcome.

In 1978, lighting directors in Canada formed their own society. Independently governed and financed but affiliated to the U.K. parent society, their membership had reached 120 within two years. They organise their own meetings, circulate their own newsletter, and there is a regular exchange of news and information with the U.K. STLD.

Last year 25 U.K. Society members travelled to Canada to spend a week in the company of their Canadian colleagues, to exchange views and visit studios, and of course to enjoy themselves in Toronto and its environs.

July 1980 saw the formation of the STLD of Victoria, Australia. 117 members attended an inaugural meeting there, and we are looking forward to establishing a friendly relationship with them. They have recently approached us with a view to affiliating themselves to our society in a similar way to the Canadian society.



by Steve Futers

Mr Futers who was for some years the Chief Engineer at Pinewood Studios, subsequently worked overseas as a Regional Sales Manager for Rank Film Equipment, joining Telegest Associates, part of the Rank Strand Group, some two and a half years ago.

ONE of the most popular of recent developments in the suspension of lighting for television studios is the Telegest self climbing hoist now in regular use in major television complexes. Some recent jobs when self climbing hoists have been used are studios in Abu Dhabi, Ajman, Australia, Denmark, Luxembourg, Nigeria and the United Kingdom. Although the hoists have only been manufactured for four years, architects are now often planning studio structures to accommodate them.

The hoists, which can be remotely controlled, are integrated units, consisting of a suspension lighting bar and a sheet metal cradle carrying its own motor hoist designed to climb its own suspension wire ropes.

MAIN FEATURES

Installation is quick and simple. The design virtually eliminates the need for overhead grid steelwork or catwalk systems.

Studio construction can be lighter and thus more economical.

Ventilation systems (always a problem when introduced in T.V. studios) are simplified.

Maintenance of the hoists is done at studio floor level in total safety.

Removal of any faulty hoist can be achieved with the minimum of staff thus reducing loss in production time as a replacement hoist can be fitted within an hour.

Repairs can be carried out by the Engineering Department in their maintenance bay, as opposed to the studio.

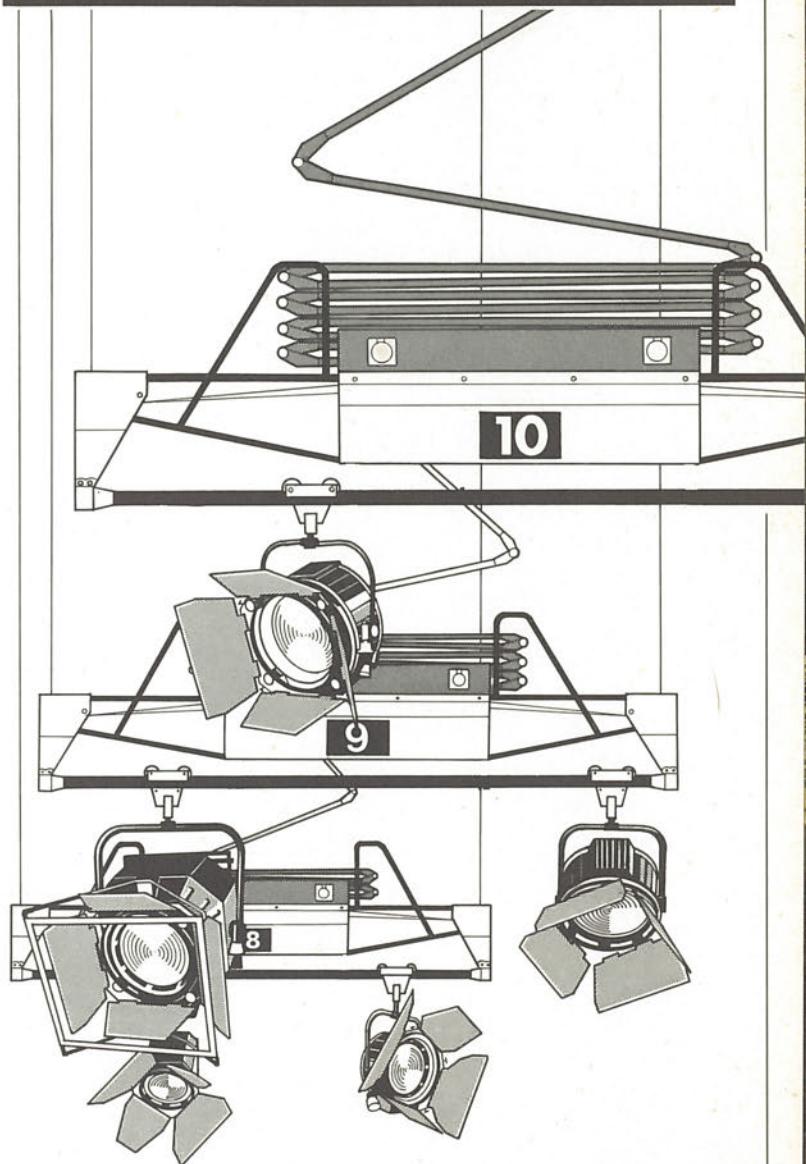
Hoist layouts can be adjusted as studio production demands increase.

Each hoist is suspended from four wire ropes, two pairs of wire ropes to be anchored to the simplest form of overhead steelwork which in turn can be clamped direct to the underside of the studio beams or trusses.

Each pair of wire ropes are carried over pulleys located at the end of each hoist bar. A compact motor driven hoist then winds 'on' or 'off' each pair of wire ropes simultaneously, thus the hoist moves vertically on its own fixed suspension.

The standard hoist unit varies between 1.85m and 3.25m in length and can carry lighting loads up to 125 Kg. Greater hoist carrying capacities are available with the introduction of a second motor giving a carrying capacity of 175 Kg.

SELF-CLIMBING HOISTS



The wire ropes are protected by a load sensing system which is activated should a 'no' or 'over' load condition be caused by careless use of the hoist. Overload and slack wire protection is achieved by the action of pivoted jockey arms operating microswitches. Switches which limit the upper and lower movement of the hoist are activated by cams, gear driven directly from the main gearbox.

Failsafe permanent magnetic brake units are fitted to the input side of both winches. The brakes are automatically released when the motor is running but they can also be released by a separate control in an emergency if a fuse or mechanical failure is suspected. In this situation the winch would descend slowly under its own weight against the 59:1 gearing. The bottom limit of this descent can also be fixed via a separate cam and micro-switch.

Twin groove pile winding winch drums carry the cables which are terminated on the outer faces of the winch plates to give easy inspection of the crimped cable ferrules.

The main frame is constructed of light gauge tubular steel and extends the full length of the hoist. The centre section which contains the power unit components is constructed of steel angle and enclosed in steel sheeting for security.

The barrel from which the luminaires are suspended can either be high duty 48mm diameter steel tube or, for heavy loads, inverted 'C' track to take wheeled trollies.

Power cables to the motor and outlet sockets for the luminaires are fitted into the folding trays which are fastened at one end to a high level terminal box and the lower end to the main frame cable tray collector, onto which the outlet sockets are fixed.

THE NEWSLETTER

The newsletter is a vitally important part of society life. It has grown from its one page first issue to its present day 20 page average. It carries not only news and information, but issued after each meeting, it contains a full account of the meeting for those members who were unable to attend. Indeed, for some regional members and for most overseas members it is the only point of contact with the society.

Under the editorship of Bill Lee (Thames TV) from its inception (now handed over to Ken McGregor BBC) it occasionally reaches magazine proportions with supplements on subjects of interest to lighting directors:— Lasers and Holography — Lamp manufacture — A History of Lighting. Additionally lighting directors engaged on noteworthy productions are occasionally asked to write about the problems encountered and methods and philosophy employed.

Copies of each newsletter are circulated not only to all members but additionally are sent to interested parties in all the production companies, to the industry press, and of course to the affiliated Canadian society.

SPONSORS

The society seeks to maintain very close contact with companies associated with television lighting, and we encourage and welcome sponsor membership. Their help, both financial and in the provision of facilities and occasionally venues for meetings, is absolutely vital to our relatively small society. In return, we offer them the opportunity frequently to meet most of the country's lighting directors, and occasionally to display and demonstrate their equipment.

The society is now in its seventh year, and the 1981 meetings calendar, which started with the combined meeting with the B.S.C., will include a regional meeting at the BBC's Wood Norton training school at Evesham — a return visit to Rome to see Ianiro's new factory — and a meeting at Syon Park.

Great emphasis has been placed on the organisation of international meetings, and in addition to the visits to Rome and Canada mentioned previously, the society has organised a trip to Paris in 1977 to meet our French counterparts of the Association of Directors of Photography and attend their celebrations at the end of their first ten years of colour television, and in 1980 a visit to Cologne to see the Photokina exhibition, meet W. German lighting directors and visit their studios.

So that brings us up to date. We feel that we have established a successful society. Membership enthusiasm remains high and meetings are always very well attended — occasionally the numbers are embarrassingly high.

Fortunately there seems to be no shortage of interesting subjects for debate and venues for meetings, and the society, this year under the new chairmanship of Bill Lee (Thames TV), looks forward to another stimulating and enjoyable year.

Anyone interested in applying for membership should contact the society secretary: Eric Wallis, The Cot, Ditton Road, Langley, Berks SL3 8PR.

Resurrection of a Long

THE BBC's Television Centre in London contains eight general purpose studios, two news studios and two presentation studios. The term "general purpose" in this context implies that the studio possesses all the technical and production facilities necessary for making any type of programme from drama, light entertainment, magazine, musical etc.

Studio TC2 is (or was) one such studio, some 320 square metres in size with a grid height of approximately 8 metres. It was in use from its completion in the '50's up to 1969 and was then removed from service as an economy measure and used mainly as an equipment store: it even had the doubtful privilege of putting up with the author as a junior engineer for a short time in 1963.

Towards the end of the '70's it was felt that with the extended hours of broadcasting, the studio should be equipped to re-enter service. It was realised that any equipment left would have long been overtaken by the march of technology or operational philosophy, so everything remaining even down (or up) to the studio grid was removed leaving the complete studio and associated control areas to be filled with the most modern, sophisticated equipment that the BBC's finances would allow.

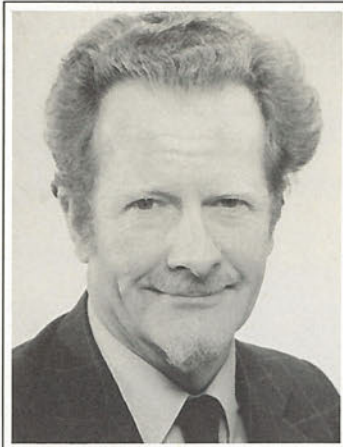
In the case of the production lighting, the main subject of this article, this would mean a flexible, intensity memory control system coupled with semi-conductor dimmers, dual source/dual wattage lanterns for general lighting and for the first time a separate suspension system dedicated to overhead cyclorama lighting.

Perhaps I had better examine the philosophy behind each of these facilities in turn. We aim to optimise the staff/equipment formula in such a way as to enable us if necessary to have a complete change of studio programme in 24 hours. This requires a high level of capital investment but it means that the studio is utilised to the full when in use and re-rigging time is kept to a minimum.

Firstly, the lighting suspension bars are equally distributed over the studio grid and are remotely controlled from the studio floor so there is no requirements for personnel to be in the grid manually setting the lateral position and height of the lanterns as in the alternative monopole system. While the bars are laterally fixed, the large numbers involved coupled with the use of the dual source lantern form what is called a "saturation rig" and virtually removes the necessity of a light source being required in a space between bars.

The dual source lantern itself is an interesting concept which was developed by industry for the BBC some fifteen years ago. By putting a "hard" and "soft" lighting source in one shell and combining this with dual wattage lamps giving 1 1/4, 2 1/2 or 3 3/4 kW intensity a very flexible lighting tool is provided. Perhaps I should explain that in television we have a technical medium that can only cope with limited changes of colour in the lighting when dimmed, whereas in the theatre no such problem exists as the eye lies where the camera does not, and an artist can look perfectly normal under fully raised television lighting but can look positively bucolic when the dimming is taken too far. To this end the source selection (hard or soft) and

by Tom Deakin



Tom Deakin is a senior planning engineer in the Studio Capital Projects Department of the BBC. He received his initial engineering training with the South Eastern Electricity Board, then moved to the Scientific Civil Service and worked in guided missile research. He joined the BBC in the early '60's to assist with the introduction of the BBC's second channel. After a short period as an operational television engineer he joined the Lighting and Mechanical Unit of his present department. The department as a whole is

responsible for the planning and installation of the BBC's studio engineering facilities and in conjunction with other specialist departments in the BBC the construction of sound and television studios and other broadcasting facilities throughout the British Isles.

Tom is currently the Project Leader for the BBC's major television studio development in Belfast.

His hobbies include playing and listening to music in all its forms and drinking real ale (also in all its forms).

coarse intensity are selected initially by manually operated lighting poles and then fine intensity and group selection is made by the control system. The "saturation rig" as mentioned earlier thus removes the necessity for derigging lanterns from a barrel for a change in individual lighting requirements.

The lighting of cyclorama cloths has

cheaper) to produce acceptable pictures using a simple manual control system. This would cover most programmes with the exception of complex light entertainment shows where lighting is used in a most spectacular way as a tool of entertainment rather than to produce "natural" pictures as in drama. The problem with such a system is of course that no rapid

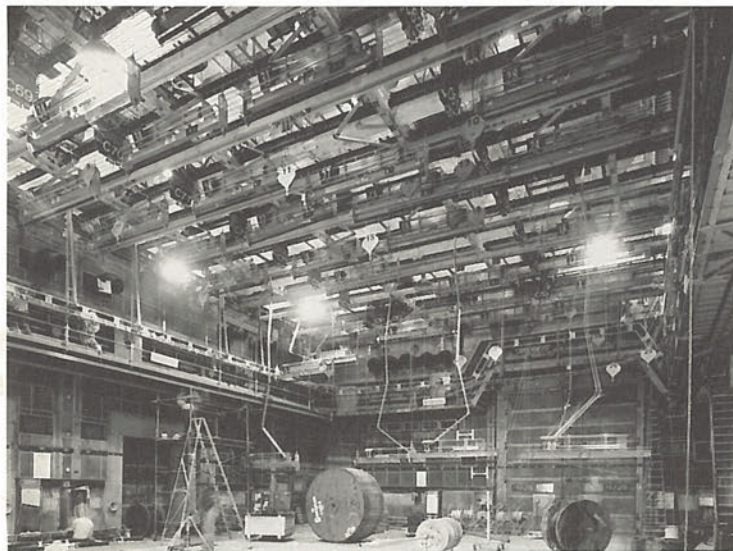
service in the autumn of this year and it was realised that mainly because of the lead time in manufacturing the specialised suspension systems, work would have to start some eighteen months beforehand. As far as the production lighting was concerned, (studios do have to have those things called cameras and microphones) the work could be logically divided into the following discrete categories:—

1. Re-designing and re-laying the studio grid.
2. Manufacturing and installing the lighting suspension winches.
3. Supplying the lanterns.
4. Providing and installing the lighting control desk and dimmers.

It is even possible, though not necessarily advisable, to separately purchase the lighting control desk and dimmers — making five categories. When an installation is undertaken in this way the planning engineer is faced with the problem of writing four or five specifications and dealing initially with up to three or four times that number of manufacturers if he is to obtain a fair price. When the early planning of this refurbishment was undertaken my department, through no fault of its own, was somewhat short of manpower so a decision was taken to endeavour to seek one contractor who could undertake the whole of the work, if necessary using subcontractors. In the event a contract was placed with Rank Strand and at the time of writing (March 1981) they are well on the way to completion.

This is the complement of production lighting and allied equipment they are installing:—

1. 38 lighting winches supporting 2.3 metre bars with a S.W.L. of 160 kg.
2. 4 lighting winches supporting 1.6 metre bars with a S.W.L. of 160 kg.
3. 26 overhead cyclorama winches with a S.W.L. of 25 kg.
4. 33 scenery winches with a S.W.L. of 120 kg.
5. A double cyclorama curtain track.
6. A Rank Strand "Galaxy" 240 way lighting control desk.
7. 236.5 kW MCM thyristor dimmers.
8. 4-10 kW MCM thyristor dimmers.
9. 88 — dual source Quartzcolor "KAHOUTEK" lanterns fitted with 1 1/4/2 1/2 kW lamps
10. 10 Quartzcolor "POLLUX" 5 kW spotlights.
11. 5 Quartzcolor "ANTARES" 5 kW spotlights.



A general view of the studio floor and the underside of the new grid taken from control room end. Units lettered 'C' in the grid are cyclorama motorised pantographs. Units with plain numbers black on white (11, 15, 25, 26 etc.) are scenery winch pulley

blocks, units with plain numbers white on black (22, 23, 24 etc) are lighting bars. Lighting bar number 15 at the far end of the studio is in the lowered position and the 'flip-flop' tray feeding production lighting power from grid to bar can be clearly seen.

until recently been achieved by the use of the ubiquitous "ground row" lantern; basically this consists of a row of flood lights laid along the base of the cyclorama, some one to one and a half metres back from the cloth. These usually have to be hand rigged for each show and are thus very labour intensive; they also take up useful floor space. The more recent approach is to light from overhead, the lanterns being permanently rigged from a discrete, remotely controlled suspension system.

Last but by no means least, the lighting control system itself: now it would be possible (and purely from a capital investment point of view far

changes of lighting are possible so recording and thus studio usage times would be considerably increased, and we are therefore virtually forced to invest in a modern, microprocessor based control system with the most complex, fast moving facilities.

I hope I have made it clear by now how our programme costs are reduced and how we can make some attempt to retain a sense of continuity for artists when rehearsing and recording. Having discussed at some length the BBC's approach to a TV studio, (I hope I have a few readers left) let me give some details of the TC2 installation.

The studio was required to re-enter

Dead Television Studio:



- 12. 2 Quartzcolor "VEGA" 10 kW spotlights.
- 13. 26 Quartzcolor "IRIS TWO" overhead cyclorama lanterns.
- 14. Undergallery lighting track round 3 walls of the studio.

The studio is fed by a 240v single phase unregulated supply with a maximum demand of 220 kW. Each lighting bar will be fitted with two adjustable 2 metre pantographs. The overhead cyclorama winches are mounted approximately 3 metres from the cyclorama cloth.

I hope you have found the foregoing interesting and (dare I say) it may help you to dig into your pocket for your next television licence. I am indebted to the Director of Engineering of the BBC for permission to publish the article.

Examples of equipment specified for TC2

Iris 2

Pollux 5 kW



Vega 10 kW

Antares 5 kW

▲ A corner of the walk-over lighting grid. The 'animal' cages house the motor and gearbox assembly for the lighting bars, the units in the foreground marked C55 and C54 are drive units for two of the cyclorama motorised pantographs.



"Galaxy" memory lighting control.

Satellite

TO mark the production of the two hundred and fiftieth Duet we have decided to launch our new intermediate system on the world market. Satellite was originally developed using the well proven Duet electronics for the German and Scandinavian markets, to satisfy these countries' famous insistence on visible quality as well as on total engineering integrity.

These invisible qualities of engineering integrity depend on the job being done right, rather than simply adequately, even though a customer's awareness will only be by long and trouble-free service. Many important design and manufacturing decisions flow from this insistence on invisible quality. For example, pins for the built-in pin patch are gold plated. Why? For the same reason that the horn push contacts on a Rolls Royce are gold plated, even though not one in a thousand drivers will ever know or care. Because gold plating provides the perfect electrical contact surface, which will never corrode or deteriorate. Why do we use a twelve inch V.D.U. rather than the readily and far more cheaply available smaller V.D.U.'s offered on all competing small systems? Because at the end of a six hour lighting session a board operator needs a screen whose characters are of a size that our experiments have taught us are the minimum that can be readily seen after hours of operating.

Now to the 'visible quality' of Satellite. The desk is veneered in Peruvian walnut and the silk screened legends identically colour match the fleck colour within the veneer. Again, is this fanaticism about standards and quality misplaced? With Strand and Strand Century memory systems out-selling all others in the world combined, we hardly think so. Quality cannot be divided. One of my heroes, David O. Selznick, said "There are only two kinds of class: first class and no class." We at Strand agree!

SYSTEM SPECIFICATION

120 Channel 198 memory system fitted as standard with:

- * V.D.U. mimic
- * Floppy disc library storage
- * Special effects and back-up pin patch
- * Built-in dimmer line termination area
- * External connectors for peripherals (Printers etc.)
- * Switched power distribution for all peripheral units. One key activates the whole system
- * Blank panel provided for customers' special controls (house lights, colour change etc.)
- * Low voltage safety stalk plot lamps
- * Digital LED clock



The veneered desk is finished to the highest standards to encourage user pride and thus maintenance and care. Legends are currently available in German and English language, as is the V.D.U. display, but who can say what the next language may be?

The top of the desk is fitted with two identical connector plates, to allow the V.D.U. and disc unit to be positioned to user preference.

The main control panel includes all standard Duet controls with the addition of a digital clock.

Two system key switches with LED indicators are provided, one controlling the main system and peripherals, the other controlling the back-up and effects system.

Remote dimmer racks can be turned on from the desk.

The special effects control panel works in conjunction with the pin patch. Ten faders are provided to control the pin patch group directly as a system back-up. A Grand Master controls the group masters.

Subtle and various flashes can be

produced as required from the two flash generator circuits, and the sound to light unit.

These effects can be routed to the pin patch groups by using the selector switches associated with each group fader.

Push buttons allow instantaneous flashes of either individual circuits or groups.

Two flasher circuits and a four channel sound to light converter are standard.

TECHNICAL SPECIFICATION

Power Input: 240v 50 Hz

Dimmer Output:
- 10v via 10K + diode = full
0v via 10K + diode = zero

Control Channels: 120

Fade Accuracy: 256 steps

Record Accuracy: 64 steps

Memory:

198 cue Semi conductor memory, battery maintained for minimum of 1 month for maximum recharge time of 12 hours.

Output Connectors:

Top panels:

- (a) mains power.
- (b) video (1v composite)
- (c) floppy disc data provided in two recessed dishes for use with free standing monitor and floppy disc unit.

Right hand side panel:

- (a) dimmer outputs in 5 x RTG 26 sockets (one socket per 24 channels) for use as either control output or connection to fader wing.
- (b) Fader master input.
- (c) Riggers input.
- (d) Printer output.
- (e) Submaster connector.
- (f) 3 mains sockets for printer, faders and submasters.



Rank Strand

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