



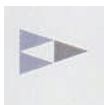
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Message from the President

Dr Roger Blakeway FIEE,FSCTE

It would be very easy, in this our 50th year, to devote the whole of my Presidential Message to reminiscing about the past. There is certainly adequate material available, enough to fill a book or two let alone a small part of this booklet, even from within my own short span of involvement with the Cable Industry. However, Tom Hall and Dan Smart will provide a much better historical record than I could hope to achieve and I will, therefore, concentrate on the Society now and its aspirations and challenges for the future.

Part of the reason for the success of the Society has been its ability to adapt to changes within the industry. This has been particularly true over the past few years with the advent of broadband licences, the opportunity for operators to expand into the telecommunications arena and the rapid advance of technology. There has been a need for the Society to broaden its outlook to encompass all the skills that are required to design, construct and operate a modern telecommunications network. It has had to be responsive in the critical areas of education and training. The introduction of the Installer Training Course has been a significant milestone for both the Society and the industry. In addition to our technical lectures, which we have increased in number and experimented with regional venues, we have formed strong ties with NCTI to provide subsidised scholarships of their distance learning packages.

The rapid growth of the Society over the past few years has not been without its problems; there is an ever increasing administration requirement and we are fortunate to have dedicated staff in our Society office, a facility shared with the CAI to our mutual benefit. Perhaps we can take as an accolade the fact that we have been noticed by the VAT man, an unwelcome additional workload but, on the whole, financially beneficial to the Society and certainly a milestone in our growth curve. The success of the Society is also due to the dedication and efforts of the executive committee, a group of engineers giving freely of their valuable time believing that the SCTE has a major contribution to make to the industry.

As part of our 50th year celebrations we have tried to expand the social side of the Society. We have had a very successful boat trip on the Thames at Henley and provided subsidised tickets for SCTE members attending the CAI dinner held in June. All our lectures this year are being followed by a cocktail reception to enable members and guests

the opportunity to get to know one another and their executive committee. The additional cost for all this is being met by a special 50th Anniversary Fund with generous donations from the industry. Acknowledgements of their participation appear in this supplement.

The fund has also enabled us to take a look at our representation at external events. We have produced new promotional material for exhibitions and this September sees our first appearance at IBC in Amsterdam in an attempt to increase our membership overseas. The Society is a sponsor for IBC and has a seat on the management committee; the aim is to secure more exposure of cable and to raise our profile in the world of broadcasting. We shall also attend ECC at Olympia in October, our stand being generously provided by the CCA. Last year saw an amazing level of interest in the Society, almost a complete sell-out of application forms and magazines!

The climax of our anniversary year will be our annual dinner, which will be held at Woburn Abbey on Friday November 17th. It is again our intention to provide subsidised tickets to make the event as affordable as possible to all our members. The dinner will be followed by the presentation of the Society's Awards of Excellence and entertainment. Woburn will be our third annual dinner and it is appropriate to recall that the first dinner was held in the honour of Tom Hall on his retirement from the role of Society secretary. The Society owes an enormous debt of gratitude to Tom as a founder member and for the way that he kept the Society going through many difficult years. Tom continues to provide valuable contributions to our magazine CTE, as well as contributing to the running of the Society as its honorary director.

What then of the future, the next 50 years? It would be extremely foolish to believe that we can predict, in any detail, how technology will change our industry over the next 10 years, let alone the next 50. The lesson of the past is one of change and adaptability. The cable engineer of the future will need to learn many new skills and the Society must be ready to educate, inform and support its members as the future unfolds. Will there be a future for cable? I firmly believe that it still provides the one "renewable bandwidth" communications medium and, as such, will always be the heart of any comprehensive communications network.



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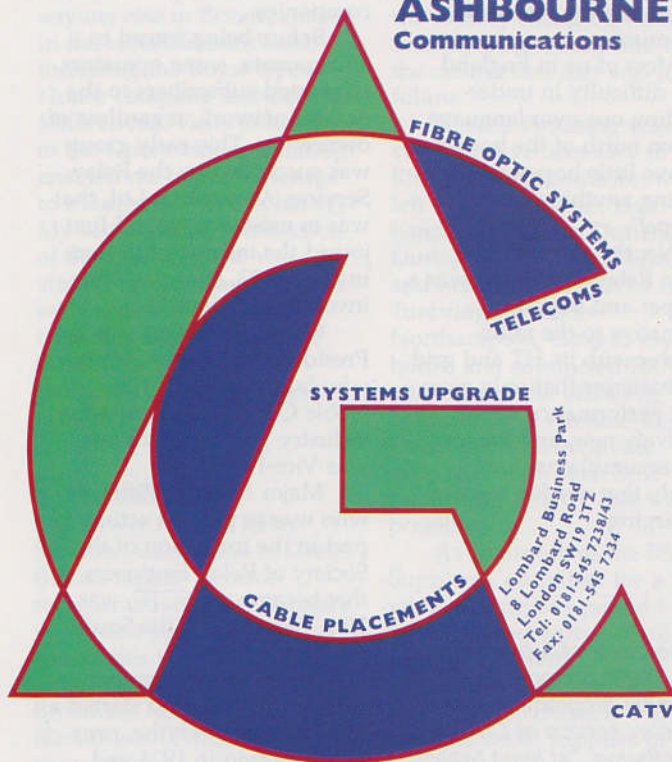
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Origin and development of the SCTE

Tom Hall MBE, founder and director of the Society, reminisces about the early years of the industry, outlines the formation of the SCTE and charts its progress to the present.

Cable television in Britain, now expanding to include telephony and other communication services, evolved from Radio Relay, and the SCTE came into being as a result of my early involvement with the Relay Services Association. Nothing remarkable about my pioneer activity, just that I was in the right place at the right time and with the right contacts.

Radio Relay, with just a switch and a loudspeaker in the home, was very successful in the UK and parts of Europe, notably Holland

Belgium, in the late twenties and the thirties. It's difficult to understand why Radio Relay was so successful in the Netherlands, a country with Hilversum, Europe's most powerful transmitter and hardly a hill to obstruct signals. Satisfactory reception was possible everywhere with the proverbial bent pin and lump of sugar. Maybe it was the expectation that transmissions from neighbouring countries would become available.

The prospect of programmes from other countries had no relevance to the growth of Radio Relay in the UK - except possibly for the pop music with English disc jockeys from Radio Luxembourg on Sundays in the mid thirties, as an alternative to John Reith's dismal offering on the BBC transmissions.

Most of us in England have difficulty in understanding our own language spoken north of the border, so have little hope of deciphering anything from Europe!

No, the attraction of Radio Relay was that it was a cheaper and superior alternative to the radio receiver with its HT and grid bias batteries that only gave peak performance when relatively new, and the lead/acid accumulators for LT supply that needed regular recharging.

The cover of a brochure (c.1928) promoting GEC's single-programme radio relay service at Coventry, offering "at least twelve hours uninterrupted broadcasting" a day for 1'6 per week and with no installation charge.

The only people regretting the passing of the home accumulator era were the manufacturers, the garage owners that often buckled the plates by rapid charging, and the army of youths ferrying them to customers on carrier cycles on a weekly exchange basis.

Early relay associations

The first organisation to represent operators was the Wireless Relay Services Association formed in Burnley in 1931. Burnley was well-known in Relay circles, not only because it was the home of JG Coates Ltd, principal suppliers of material for network construction, but eventually because it was served by no less than 14 different operating companies.

Before being forced to amalgamate, some operators connected subscribers to the nearest network, regardless of ownership. This early group was succeeded by the Relay Services Association Ltd, that was in existence when I first joined the industry full-time in May 1933, after part-time involvement since 1928.

Oswald B Kellett was the President and Harry Noble, who later presented the Noble Cup to inaugurate the industry golf competitions, was Vice-President.

Major H MacCallum, who was to play an active part in the formation of the Society of Relay Engineers that became the SCTE, was Hon. Secretary of the Southern Committee.

A prominent member was AW Maton who started a relay system at Hythe, near Southampton in 1924 and, despite other claims, is generally regarded as being the original pioneer of radio





A Wallace Maton who owned the first licensed radio relay station.

On May 24th, 1933 an extraordinary general meeting of this Association was called to discuss the formation of a new nationwide body that eventually came into being in 1934 as the Relay Services Association of Great Britain (RSA) with Capt. J Russell Pickering as secretary. Former Home Secretary (1919/22), The Rt. Hon. Edward Shortt PC, KG was president.

Russell Pickering was an accountant, residing and in practice at Tunbridge Wells, but used offices at 23 Bedford Row WC1 as a London address for the RSA. He was credited with being secretary of more companies than anyone else in Britain, mostly in the entertainment field, including the Royal Opera House company and Bertram Mills circus. Visits to his flat in the Opera House building, enabled me to get backstage to indulge my love of ballet. My last wartime recollection of the Opera House was attending a tea dance in 1939 with relay colleagues including Bryan Groom of Galashiels Relay Ltd who pioneered Radio Relay in Scotland.

The new RSA

The newly formed Relay Services Association of Great Britain rapidly became representative of the industry with most operating companies in membership, although the largest company, Broadcast Relay Service Ltd (Rediffusion) withheld support for a while. Area committees with representatives on the central council enabled members to keep in touch with events and to

influence decision making. The most influential was the southern area, because it included London where the major companies had their head offices and consequently provided lots of senior executives, disproportionate to the number of subscribers in the territory.

Southern area secretary at the outbreak of World War II in 1939 was RR Goding of Wireless-on-Tap Ltd. He relinquished office on taking up his commission as Wing-Commander in the RAF and I was appointed his successor. An uncomfortable rail journey in an unheated train and negotiating unfamiliar ground in the blackout brought me to Goldsmiths College where Rupert Goding was temporarily based, for handover of RSA cashbooks and records.

My principal memory of the occasion is of seeing an officer using the polished top of a grand piano as a platform to address his squad. An early indication of the rapidly changing value of worldly possessions and of the destruction that was to follow.

Russell Pickering was a very effective Secretary to the RSA but administration was left to his very able "right-hand man" Eileen Duffett. During the war years, Eileen and her assistant moved from Tunbridge Wells to Northampton, close to my home, and conducted RSA affairs from the offices of Northampton Wireless Relay. I became more involved, especially with such little publishing activity that was possible.

As chairman of the RSA Supplies Committee for a while during this period I was involved with difficult negotiations with Government departments, and was also charged with stocking small supplies of scarce materials for allocation in emergencies occurring throughout the Southern Area. Manpower was as important as materials to

cope with damaged networks, and I maintained a Register of members able to assist when required.

Difficulty in maintaining relay services with limited manpower and materials during the war years, and the need for interchange of information on new developments in the immediate post-war period, resulted in the gradual introduction of technical discussions at southern area RSA meetings in London. Members' engineers were invited to join meetings after the regular business had been disposed of.

Interest aroused by these discussions pointed to the need for a separate technical organisation, and I discussed the idea with a former colleague, AR (Arthur) Almond and with FSG (Fraser) Scott, Major H MacCallum, JW (John) Field and AS (Aubrey) Whitenstall, all active RSA members.

FSG Scott was chief engineer with British Relay Wireless at the time, and arranged accommodation at BRW's head office in Aldwych for exploratory meetings aimed at creating an organisation to be known as the Society of Relay Engineers, and eventually for the inaugural meeting.

Invitations to attend these meetings and to apply for membership were issued from my office in Kettering.

Inaugural meeting of the Society

The birth of the Society was fully reported in a six page feature in the September 1945 issue of the Relay Association Journal as follows:

Society of Relay Engineers

There was a large gathering at the Inaugural Meeting of the Society of Relay Engineers, held in the Conference Room, Aldwych House, Aldwych, London WC2, on Tuesday 18th September 1945.

Mr FSG Scott of British Relay Wireless Ltd was

unanimously elected to the Chair, and among those present were: Messrs JW Field, WS Akeroyd, H Milner, SB Reeder, F Haigh, CD Lindsay, WE Filby, EJ Shillibeer, W Krebs, Wing-Commander FG Ferrier, B Gipson, A Whitenstall, MHC Lewis, TH Hall, Major H MacCallum, RJ Bates, AH Moore, AE Jackson, LC Field, FWG Dean, A Randle, W Riche, L Moss, TFW Lincoln, CR Gerrard, H Hamey, HA Smith, EPR Allen, Bryan Groom and AR Almond.

The Report of the Formation Committee was given very careful consideration and the Constitution, after being duly amended, was unanimously adopted and is appended hereto.

The Founder Members of the Society are (in alphabetic order): Edwin Paul Reeve Allen, Arthur Rupert Almond, Wilfred Stubley Akeroyd, Ronald J Bates, Wing-Commander FG Ferrier, John William Field, Leslie Charles Field, William Edward Filby, Bert Gipson, Bryan Groom, Frederick Haigh, Thomas H Hall, Harold Hamey, MHC Lewis, Thomas FW Lincoln, Major Humphrey S MacCallum, Harry Milner, Arthur H Moore, Leonard Robert Moss, Sydney Bottomley Reeder, Fraser Stanhope Greville Scott, Herbert Arthur Smith, Aubrey S Whitenstall.

Then followed a list of the officers, committees and



Major MacCallum



Halden
Evans, ACTS

the entire text of the constitution of the Society.

The officers

The first officers were prominent figures in the industry at that time: FSG Scott was chief engineer at British Relay Wireless Ltd, the principal company supporting the formation of the Society. He later joined AR Almond to promote carrier-frequency wire broadcasting, first introduced at Rugby in November 1946.

Systems at Rugby and elsewhere were operated by Multi-Broadcast (Engineering) Ltd., under the first carrier-frequency licence ever to be issued by the GPO. They were technically satisfactory but were not successful commercially, largely because an electricity supply was required at every subscriber point for operation of the pre-tuned receiver, and so few homes in areas with potential subscribers had this luxury. Arthur Almond left the industry to join his family shoe manufacturing business, but I never knew what happened to Fraser Scott.

Major MacCallum was one of the most colourful men in the industry and a close personal friend. Although widely known as Major Mac he was actually Lt.

Commander MacCallum. At 19 he volunteered for the Boer War and served in Paget's Horse as a trooper. He volunteered for the First World War and reached the rank of major, and volunteered for the Second World War and became a Lieutenant Commander. He was also involved with the RFC and later the RAF, so had the unique distinction of serving in all three forces.

At one time with the Marconi Company Major Mac was involved in discussions with the Post Office leading to consent to broadcast for a limited period in the evenings on a restricted waveband, and to the erection of a wireless telephone station at the top of Marconi House, W1. This station, licenced as 2L0, eventually became the London Broadcasting Station of the BBC, the British Broadcasting Company, which later became the British Broadcasting Corporation as we know it today. Contrary to popular belief the station was never at Savoy Hill. It was transferred from Marconi House to the roof of Selfridges and later to Brookmans Park.

Major Mac started a radio relay service at Basingstoke in 1930 and was a keen supporter of the first Wireless Relay Services Association and its successors. He was a colleague of Captain PP (Peter) Eckersley, an advocate of wire broadcasting who was with the Marconi Co. in pre-BBC days, and became the BBC's first chief engineer.

JW (John) Field was an associate of JF Powell, founder of Broadcast Relay Service Ltd that became Rediffusion, and his son-in-law, JWC Robinson who founded Relay Exchanges Ltd and Rentaset, and eventually became chairman of the combined Radio Rentals and Thorn EMI cable and rental companies. John Field left Mr Powell's operation in Clacton to

establish his own chain of radio relay companies in the Medway towns and after World War II became involved with Arthur Almond's carrier-frequency schemes, using the title Multi-Broadcast Ltd for some of his companies. He eventually sold his relay interests to JWC Robinson's Relay Exchanges Ltd and joined the board of that group. His financial expertise was of great help to the Society and he arranged for his Company Secretary, Leslie V Scambler FCA, to act as honorary auditor to the SRE from April 1949 to March 1965.

Secretary

Major Russell Pickering, MBE gave invaluable help in drafting the constitution of the Society and dealing with all necessary formalities prior to its formation and it was everyone's wish that he be appointed Secretary. His very able assistant, Miss Eileen Duffett, attended all our meetings and carried out administrative work at and after the inaugural meeting. Major Pickering died in April 1947 and Miss Duffett was unable to continue, partly due to health problems arising from overwork but mainly because she planned to marry.

I had not intended to become involved with administrative work for the

SRE, other than as a member of the executive committee and its sub-committees. I had heavy commitments with my own growing relay businesses and was already devoting much time and effort to RSA activities as secretary of the southern area and member of the national council and a number of its subcommittees. I was also closely involved with activities of the British Institution of Radio Engineers, now merged with the IEE.

I was however persuaded to take on the SRE work and my appointment as secretary was announced at a lecture meeting at the Royal Society of Arts, John Adam Street, London WC2 on 7 October 1947. I continued in office and provided accommodation for the Society's activities until, approaching my 80th birthday, I thought the time had come to step aside. My suggestion that Beverley Allgood should succeed me, as this would coincide with changes in her own situation as secretary of other organisations, and enable the Society to have headquarters in London, was approved and has worked extremely well as I never doubted it would.

Relationship with RSA

The Relay Services Association (RSA) that became the Cable Television

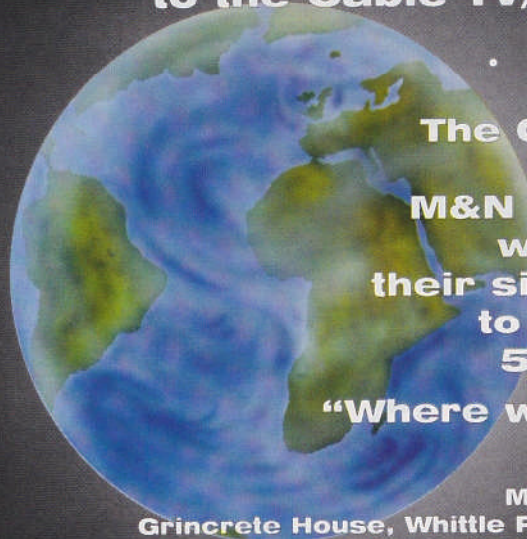


A Northern section of the Society was formed in 1974. Ken Marchant, Stanley Bell, John Pixton and Viv Lewis are seen with Tom Hall at an early Northern Lecture meeting at Oldham College of Technology.





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Association (CTA) and is now the Cable Communications Association (CCA), encouraged the formation of the SRE and has been supportive ever since.

The Relay Association journal reported regularly our proceedings and published promotional articles and announcements of future lecture meetings were made at the National Council meetings and at area meetings throughout the country.

From its inception the RSA had recognised that its members were often faced with technical problems on which the Association ought to be able to give advice, and by the autumn of 1949 decided to approach the Society for help. As a result agreement was reached for the Society to be consulted on appropriate problems submitted by Association members. The agreement was initially for a trial period, but continued until the Association needed to establish its own technical committee to which the SRE was invited to appoint delegates.

The Association's first full-time secretary, Mr R Morton Mitchell, resigned early in 1949 and was succeeded by Mr Halden Evans ACIS, who was particularly helpful to the Society in its early years. He became a close personal friend, and stayed at my home in the Midlands en route to Scotland whenever he visited RSA President, Sir Fitzroy Maclean, Bt, CBE, MP, at his home on Loch Fyne, Argyllshire.

Services to members

It was originally planned to hold two lecture meetings in London each year, in spring and autumn. These were staged at various prestigious venues including the Royal Society of Arts in John Adam Street WC2, the Gaumont British Theatre in Wardour Street W1, the EMI Institute in Pembridge Square



February 26th 1952: SRE members visiting the relay station of Britain's first cable TV system at Gloucester, then owned by Link Sound & Vision Services Ltd and later acquired by British Relay Wireless Ltd. Signals from Sutton Coldfield at Chosen Hill were beamed by a parabolic VHF antenna to an amplifying station in the city and then to subscribers on a 10MHz carrier. Subscribers could have either four sound programmes or three sound programmes and television

W2, BICC's London headquarters at 21 Bloomsbury Street WC1, the Connaught Rooms, Great Queen Street WC2, Mercury House in Theobald's Road WC1 and the IBA headquarters at 70 Brompton Road SW3 until agreement was finally reached for the use of the Faraday Room and occasionally the 630-seat main Lecture Theatre at the IEE in Savoy Place. Much of our early activity was centred on the Savoy Hotel. Our first Lecturers were entertained to lunch there by members of the executive committee and I remember one very special occasion with the great Carroll Gibbons at the grand piano. Cost considerations compelled us to move to Simpsons in the Strand, still a prestigious venue, and we dined there for many years. These lunches have never been at the Society's expense, the cost being shared between Executive Committee members, although in recent years Scottie Flink of Gilbert Engineering has generously hosted many of them.

Growing membership brought a need for lecture meetings in the provinces and a first venture was at the Engineers' Club in Manchester. This led to regular repeats of London lectures in the North, mainly at Oldham College

where the principal made us very welcome. Visits to relay installations and to manufacturers' plants and laboratories became a regular feature, but there were no purely social events until the executive committee arranged a superb dinner at Meriden, near to my home, in May 1993 to mark my retirement as secretary and editor of publications. A lovely gesture that I much appreciated.

Publications

Proceedings at Lecture Meetings have always been published, and verbatim reports of discussion were included until recent years when the cost of a competent reporter became prohibitive.

The original publication was titled "*Proceedings of the Society of Relay Engineers*" and the first issue formed part of the Relay Association Journal dated August 1946, with reprints available for SRE Members. The second issue was published in April 1947 in the same style as the previous reprints, but by the third issue in January 1948 a style was adopted that was to continue for 23 years.

January 1971 saw the introduction of a new-style A4 publication titled "*The Relay Engineer*" containing articles and news items,

and after only four issues (in January 1973) the title became "*Cable Television Engineering*", to match the Society's change of name.

By the autumn of 1989 it became apparent that the Society could no longer finance production of the Journal and agreement was reached with an American publisher for it to be incorporated in *International Cable*, a monthly high circulation magazine.

Publication returned to the UK with the first 1992 issue, again quarterly and only available to SCTE members and supporters. There have been changes in layout since, to make the Journal a thoroughly modern publication.

The Society's publications form a unique history of technical achievement in the communications field. Dan Smart who has now succeeded me as editor refers to this in an article in this issue.

Editing and producing the journal for some 47 years was the most enjoyable part of my long involvement with our industry. It brought me the opportunity to meet so many interesting people, and to travel throughout the UK and to many European countries.

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1989: Bill Riker, president of the US SCTE (right) presents Tom Hall with a plaque to recognise his founding of the world's first SCTE. Ron Hranac, who visited Tom in the UK early in 1989 to establish relations between the two societies is on the left.

Liaison with American SCTE

The American SCTE came into being in June 1969 when the UK society was approaching its 25th anniversary, and held its first general meeting in conjunction with an NCTA Convention in San Francisco. Its first full-time office was opened in Washington DC in 1977 with Judy Baer, the first full-time staff member, as executive director.

Judy phoned me regularly for exchange of information, until she left to marry in 1983, but we never met. Steve Cox made contact with me when he became executive vice-president but it was not until Bill Riker took charge in October 1984 that a meaningful relationship began. Ron Hranac, then president of the US SCTE, came to my home early in 1989 to "build bridges" between our two Societies as he so rightly summed up the event.

Scotty Flink of Gilbert Engineering arranged for me to visit the NCTA show at Anaheim in December of that year and to meet virtually everybody in the industry. This, and many subsequent visits to US shows made possible by Gilbert Engineering, Times Fiber, Magnavox and by Paul Levine's publishing company, brought a close relationship between the US and UK SCTE's and resulted in Ron Hranac and Bill Riker becoming honorary fellows of the UK Society. I was awarded a handsome plaque (at a ceremony in Orlando, Florida) in recognition of

founding the UK SCTE and became first non-American to be admitted to membership of the prestigious US Cable Television Pioneers Club. Formation of the International SCTE, bringing together the UK, US and Canadian societies, followed.

A last thought

Having been involved with radio experiments since before public broadcasting services began, from cats whisker reception with headphones to the present inter-active multi-programme TV plus telephony services, I look back to assess what has been achieved. Principally I find it sad that so much technical expertise is devoted to dissemination of so much trivia, but have to accept that little of it is aimed at my age group.

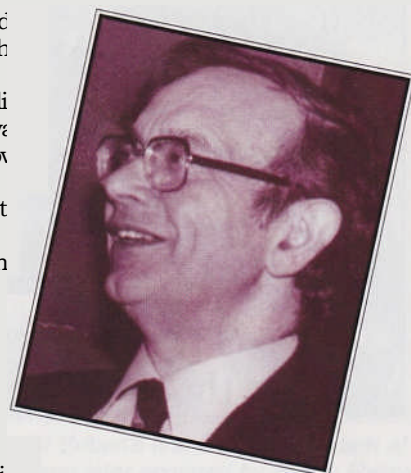
My fervent hope is that the SCTE will do everything that is financially practical to

maintain the high standard that those of us forming the Society so long ago envisaged. Our idea of an elite body to which admission was then a privilege may not now be entirely practical, but the original aims should be kept in mind.

I think of so many men in membership of the Society with high ideals who have made their mark on our industry. Men of great stature in addition to those I've already mentioned, such as Peter Eckersley, Eric Gargini, Roy Milwidsky and John Wilkinson, who are no longer with us. Other stalwarts still supporting the Society such as Rupert Kinross, Ralph Gabriel, Leslie Odell, Dick Beal, Ken Quinton, Sruki Switzer, Bob Roberts, Ken Russell, Louis Richard, Sant Kharbanda, Tony Leadbitter, Alan Burke, David Kent, Ray Seacombe, Chris Swires, Russell Eberhardt and lots of others.

And of course my close friend Lionel Mudd, who endeared himself to us all at the first lecture meeting he attended by announcing "my name is Mudd".

Tom Hall is believed to be the only survivor of the 23 founder members of the Society and now lives in semiretirement at his home in Dorridge in the Midlands.



Lionel Mudd



Delegates from the US and UK SCTEs meet in London in 1989 to discuss the formation of an international SCTE



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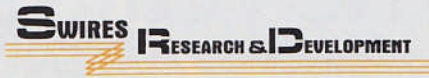
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The Journal through the years

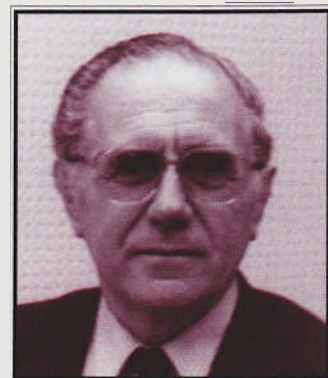
Dan Smart, editor of *Cable Telecommunication Engineering*, looks at the history of the Society's journal from 1945 to 1995



From its formation in 1945 the Society has published its proceedings. Initially they formed part of the Relay Association publication but from 1946 the Society published its own journal, known as the *Proceedings of the Society of Relay Engineers*. The format was extremely formal and simple, as can be seen from the reduced reproduction of a cover (below), and it contained no advertisements. From the beginning however, the journal has been a vehicle for chronicling

innovative ideas in this industry we now call cable communications.

In this feature I will attempt to do justice to this pioneering work by highlighting articles which, at the time they appeared, were breaking new ground. They described new technologies or first time applications of new technologies to the cable broadcasting medium. It can be assumed that since the UK was at the forefront of these developments, the journal often reported what must have been world "firsts". Distant echos of today's proposals.



Dan Smart

It must be remembered that the networks owed their existence to the fact that radio reception in those early days was not easy. Radio receivers contained valves, which needed to be heated, grid biased and HT powered. Since many houses were not connected to a domestic electricity supply, early radio receivers were battery powered, including an accumulator for the heaters. This had to be regularly taken to the local garage for recharging: in today's parlance, not a user-friendly service.

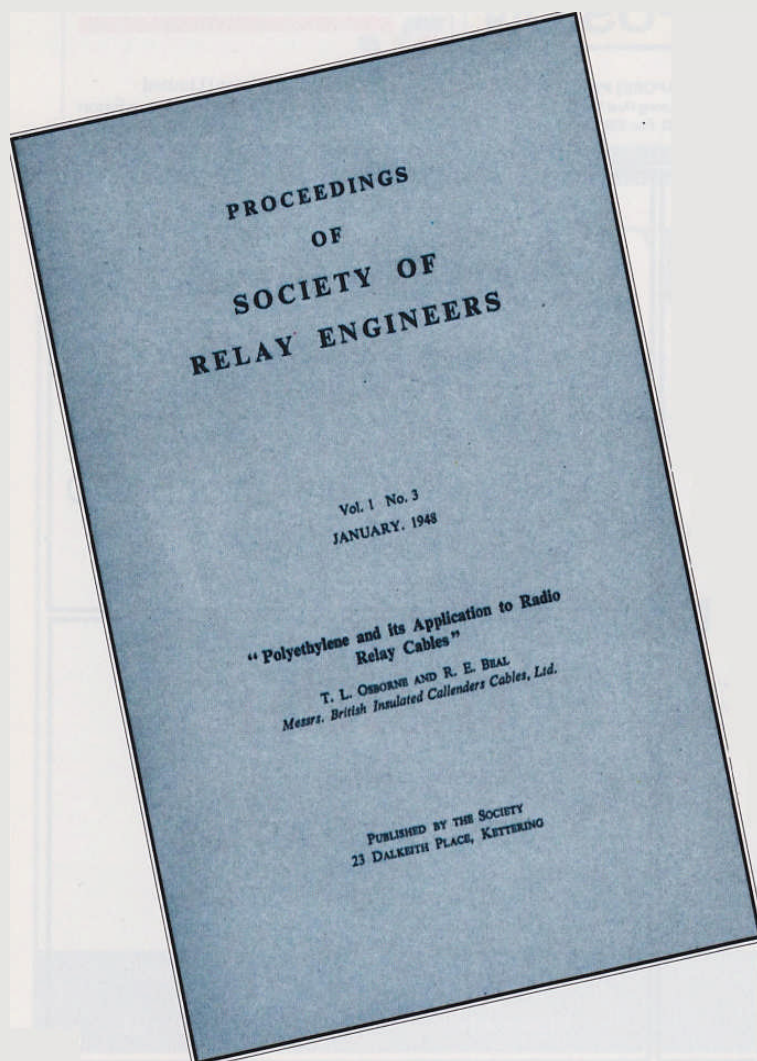
Networks which delivered audio directly into a loud-speaker were therefore extremely popular and successful, meeting that most important criterion: customers' needs.

Radio

I will start with an article by AR Almond which appeared in March 1947 entitled *Carrier frequency wire broadcasting*, based on work which had been taking place in the mid-30s, had been interrupted during the Second World War and was then being resumed. It describes the application of carrier frequencies to augment the capacity of audio distribution networks which had existed since before the war. These required a pair of wires for each programme and as radio broadcasting expanded this meant upgrading the networks. The article proposes therefore that radio frequencies be used to stack a number of programmes on each pair of wires. A system comprising four carriers, separated by 20kHz in the band 200-300kHz is described. It is an example of a good idea that was somewhat ahead of its time. It did not succeed commercially because it required in-home equipment to amplify and detect the signals.

Television

The existence of these audio networks was to prove an immense incentive to inventive people to come up with schemes for using them to distribute television. It is not surprising therefore to see an article, on exactly such a proposal, appear in September 1952, entitled *Television relay by wire* in which Eric Gargini, then



working for EMI, describes a cable distribution system using HF carriers on balanced twisted pair feeder networks. It contains the first published account of the use of subscriber taps (see figure below) to make the subscriber loading negligible with respect to the cable loss and thus avoid the need for complete planning of the network.

The exact words are *"the relay company, not knowing exactly how many subscribers to cater for, would not want an inflexible system, a system requiring planning of signal levels to every point" and "as subscribers came on the system, their connection would not disturb the signal level at the far points of the system by more than 2dB — a negligible amount".*

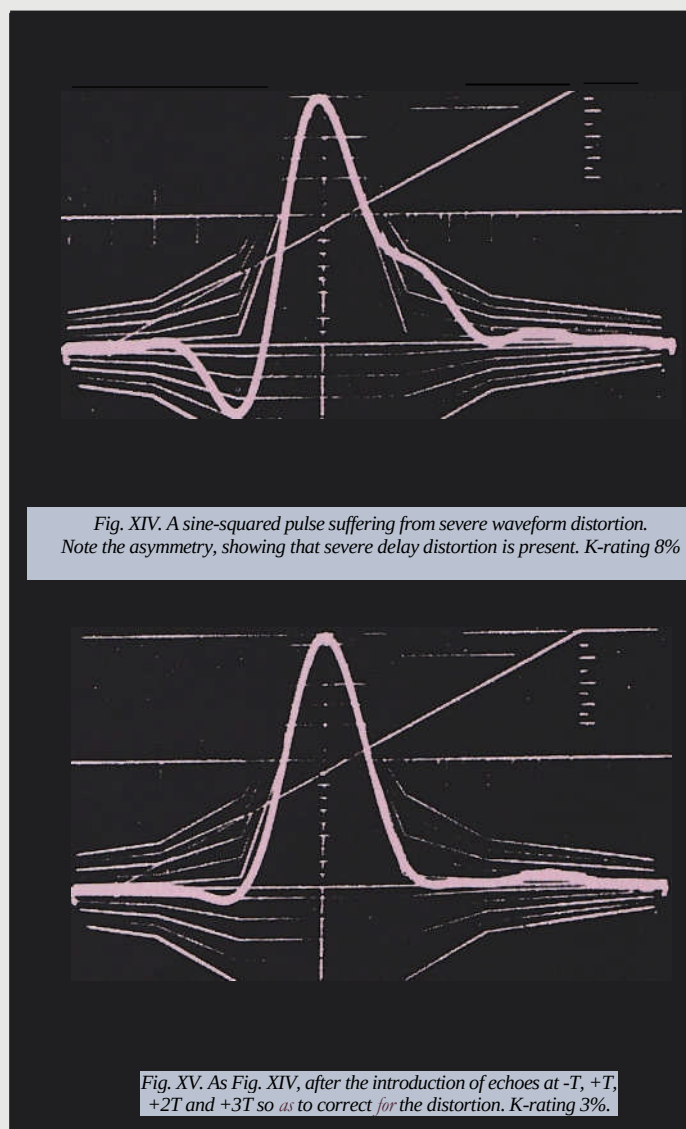
The following years proved to be very prolific and articles such as *Distribution of television by wire* by RI Kinross of Rediffusion in May 1957 and *Television relay with particular reference to the BRW Mark II television relay equipment* by KA Russell of British Relay Wireless in September 1958, highlight the intense activity that was under way in two of the companies involved in the industry. It is interesting to note that between them, these two companies eventually operated networks connecting a total of well over one million subscribers with penetration rates in the mid-50s.

It is also interesting to note that these very successful systems all operated in the frequency band 4-10MHz. This required that special receivers be used. They were, in fact, very simple TRF designs, thereby greatly enhancing their reliability. They were made and rented by the cable operators in very large numbers and can be considered, not just as the first "cable ready" but in fact the first "cable only" receivers.

Picture quality

The UK has always prided itself on the quality of its television broadcast service, not only in programme content but also in terms of the picture quality delivered to the customer. It was essential therefore, if cable television was to succeed in areas other than those with poor reception conditions, that the picture quality delivered to subscribers should be of the highest possible standard.

The UK cable TV industry was therefore a pioneer in the application of picture quality testing techniques to its networks. An article by BW Osborne, entitled *Picture quality control equipment for wired television networks* which appeared in March 1961, typifies the efforts that were being made by cable



Pulse and bar test waveforms

operators to ensure that their networks delivered the best possible signal quality. In the article, the original work of Lewis and Macdiarmid is acknowledged, and the use of the sine squared pulse for K rating assessment is described.

Previously, achieving good picture quality was a matter of ensuring a flat frequency and a linear phase response. These measurements have never been easy to perform on networks. The pulse and bar testing technique is ideally suited to field measurements and has become universally accepted by the world standardisation bodies as the method to be used for picture quality evaluation on CATV networks. The article contains some original work on the visibility and K rating of long delay echoes as well as a thorough description of the

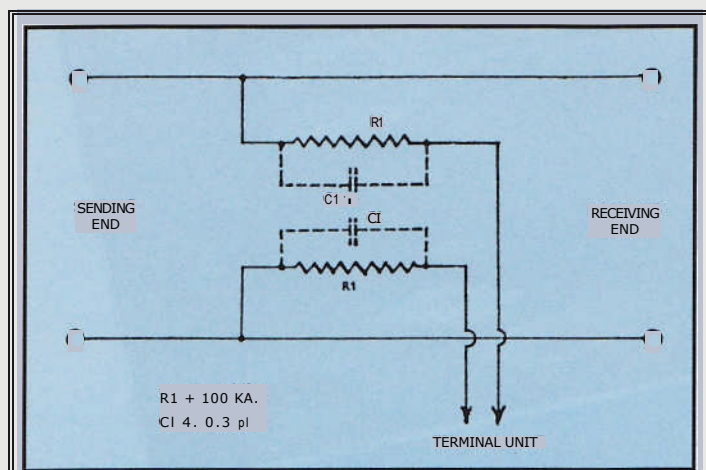
application of transversal equalisers to correct pulse distortions (see photos above).

It is noticeable how in all these early articles cable television, as we know it now, was invariably referred to as "television relay". The industry from its early days was shackled by regulations from successive governments which forbade anything other than a broadcast relay operation.

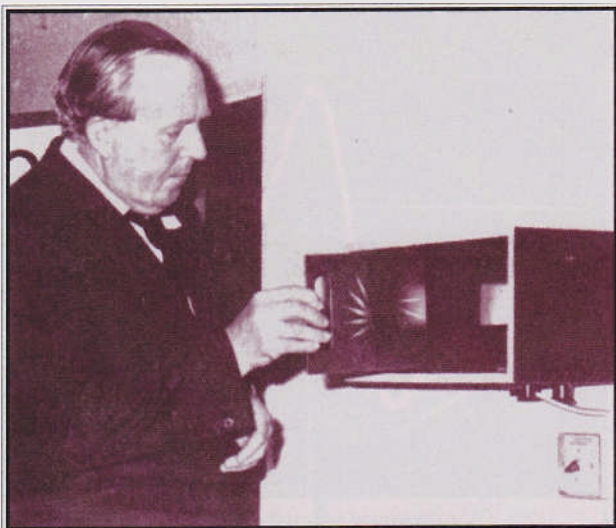
Pay television

Continuous pressure and lobbying by the industry bodies gradually brought about some relaxation and in 1964 a limited number of trials of Pay TV schemes was allowed. These early experiments were reported in the *Proceedings of the Society Vol. VI No.4 March 1964*.

Audience measuring systems and anti-piracy



First subscriber tap



Earl de la War switches on Hastings

Deregulation

It took until the free enterprise era of Mrs Thatcher's government before deregulation of the industry was achieved. This, together with the development of satellite broadcasting, set the industry on the path it is embarked today. The Society played an important role in this development by means of technical submissions to and representation on some influential committees.

Switched services

The dial-a-program system was the precursor of a number of systems using switching, controlled by the subscriber, for programme selection. It had long been apparent that, following deregulation, a continually increasing number of

programmes was likely to be required. Experience in the USA indicated that the result was a never ending re-engineering of the cable networks. Since the major proportion of the system infrastructure is in the final distribution network, it was apparent that any architecture which only required augmentation of the primary network to deal with increased programme capacity, was potentially very efficient.

A number of switched star systems were developed in which programme selection took place at the distribution nodes. This eliminated the need to upgrade the drop installation, since only one or two programmes were present on the drop at any given time, hence its band-width requirement was very limited.

considerations are all given thorough consideration. Once again, the technology was available but the heavy hand of government regulation made it impossible to exploit its potential.

Consequently, the trials were rather short-lived as they were not followed by the necessary deregulation until some 20 years later.

Educational television

Some interesting non-broadcast applications began to emerge and in February 1967 the Journal reported, in *Volume VII No.3*, on the symposium on educational television, held by the Society at the IEE. Papers described actual and proposed networks linking a number of schools to educational programmes production centres in various cities in the UK including Greater London's scheme for 1,400 schools.

The Relay Engineer

In 1971 the Proceedings of the Society was succeeded by *The Relay Engineer* and adopted an A4 format and distinctive blue top and bottom bands on its front cover. Only four issues were produced before it was succeeded in 1973, by *Cable Television Engineering*. The change of name was indicative of the changes under way at that time. The industry was moving away from being just relayers of broadcast services.

Cable Television Engineering, CTE, as it soon became known, retained the A4

format and cover appearance. At that time advertising began to be included to help defray the costs of publication of a very high-quality journal from the limited resources of a small Society.

Fibre optic

The introduction of fibre optic transmission into CATV has been without doubt the single most important event in the industry. Its characteristics, in terms of bandwidth and attenuation, have helped upgrade existing networks and plan and install new networks with capacities and reach that were undreamed of previously.

CTE was on hand, in March 1976, to report on the opening of the world's first glass fibre circuit in day-to-day service to the public. As the reproduction of the front cover of the August 1976 issue shows, Rediffusion installed a fibre optic link to serve 34,000 customers in Hastings.

The technology and applications were described in a later issue of CTE (*Vol.11 No. 2 April 1978*) by Dr AE Cutler in his paper entitled *Optical fibres and their application to TV distribution* and by Eric Gargini in his paper entitled *Application of optical cable to a switched cable television system* where the dial-a-program system installed in Arnhem, Holland, is described.

We have moved somewhat from those early days when every single splice was a minor work of art.



CTE, first published in 1973

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This is another example of an excellent idea that was too far ahead of its time. Switching analogue TV signals was not easy or inexpensive. In today's, or perhaps tomorrow's, digital world switched services will be commonplace.

Extension of upper frequency limits

Over the years, the upper frequency limit of broadband distribution systems has been going steadily up: from early beginnings when systems went up to 230MHz to today's systems extending to 1GHz. CTE published, in 1977, Ray Seacombe's article entitled *Two more octaves* which describes "the adaptation of a large VHF distribution system to operation at UHF". An upper frequency limit of 705MHz was reached.

In the spring of 1993 Ray published *A network for the 90s* in which he describes a

large franchise network design for operation at up to 860MHz using a layered multi-star architecture.

Interactive services

Hardly a day goes by without some conference being organised or some publication being devoted to multimedia and interactive services. Transactional services such as teleshopping, telebanking and tele-almost anything, will allow us to shop, work, bet etc, without leaving home.

One could be forgiven for thinking that this brave new world will be the result of some brave new thinking. In fact, these ideas have been around for many years. *CTE Vol.12* contains a number of classical articles on the subject. In February 1983 Ken Quinton published *A high capacity cable TV proposal for the UK market* in which he lists the following potential

services, additional to purely entertainment channels.

- ♦ *Specialised subject channels:* e.g. news, education, religious programmes, health.
- ♦ *Specialised audience channels:* e.g. for particular ethnic groups, for different age groups — children, aged etc, for people with impaired hearing.
- ♦ *Local channels:* e.g. local and national government information, what's on, consumer information, programmes by or about community groups.
- ♦ *Other services:* fire and burglar alarms, control of heating systems, remote meter reading, shopping, banking, betting etc., opinion polling, video games, electronic mail/messaging, interactive computer-assisted learning, general videotext information, software supply to home computers, access to national and international communications, wideband business communications.

Similar lists appeared in a number of articles during the following years e.g. WK Ritchie, of British Telecom *An integrated services cable TV network* June 1984 and Rainer Kochan, of Fuba, *Interactive star switch system for CATV networks* in March 1985.

They continue to appear to the present day.

Interestingly, all these articles equate interactive services with switched star systems. The problems of operating the necessary return path, in tree and branch systems, were acknowledged even then.

Telephony

Telephony now accounts for a very large part of the business of cable operators. Early articles on telephony do not exist because never in our wildest dreams did we consider that the monopoly of the GPO, as it was then, would ever be changed. However, when it did change, it again placed the UK at the forefront of a trend which is now worldwide.

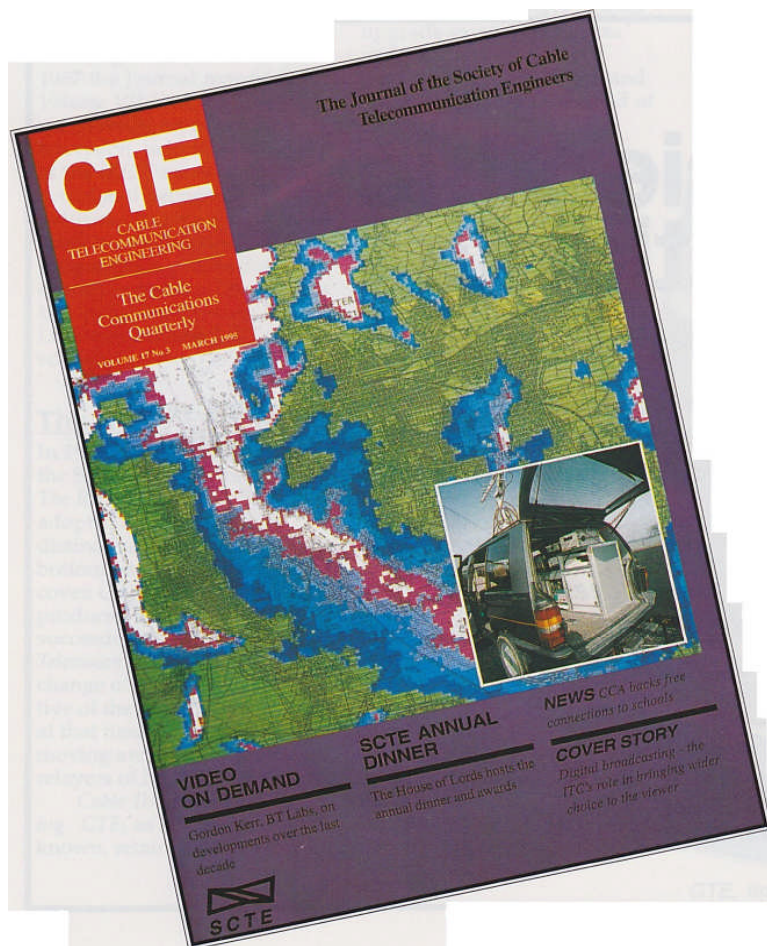
The provision of telecommunication services over our new broadband networks has stimulated international interest and investment. The lessons that have been learnt here will not need to be re-learned in the USA and other countries as and when their deregulation programmes allow. As an often quoted cliché says, the UK has become the "telecommunications laboratory of the world".

CTE has responded to this new activity by publishing articles from experts in their field. In December 1991 we published the first of a three part article by Chuck Carroll of TeleWest entitled *Design and implementation of integrated CATV/telephony networks* which described in detail the overlaid telephony network that was deployed at that time, using PDH.

Subsequently, articles have appeared which describe the more modern SDH transmission and its advantages. *Vol. 16 No.1* in January 1993 contains one article by SP Ferguson of GPT entitled *SDH in cable telephony* and one by David Holt, of Northern Telecom, now Nortel, entitled *Synchronous digital hierarchy — what it means for new CATV networks*.

Cable Telecommunication Engineering

In September 1994, at the Annual General meeting, the membership approved the committee's recommendation that the Society should change its name to the Society



of Cable Telecommunication Engineers. This move recognises the fact that telecommunications is now a large part of a cable franchise operation, both commercially and technically. It has also been the policy of the Society, for some time now, to enlist "telecoms" people to serve on its committees. The change of name, happily, retains the same initials SCTE which have become so well established in our industry.

Complementing the change in the Society's name its publication *CTE* has become *Cable Telecommunication Engineering*, also retaining the well known initials.

Digital television

Recent issues of *CTE* (Vol 17 no 3 & 4) ran two articles on the latest "burning issues" in our industries. One, by Chuck Carroll, deals with

methods of deploying digital TV transmission and other multimedia services, entitled *Hybrid fibre-coax networks for demand and interactive services*. Another one, by Gordon Kerr of BT Labs, deals with Video on Demand and is entitled *Developing video on demand — a review of the last decade*.

CTE now enjoys a reputation as the technical journal "par excellence" and thanks to the publishing arrangements negotiated it has been able to expand its contents. Not only does it continue to publish technical papers of the highest quality but it also now contains items of news, cable statistics etc.

CTE will remain however, primarily the vehicle through which the Society will inform and serve its members. If, in the process, it attracts a far wider readership, that is a very welcome bonus.

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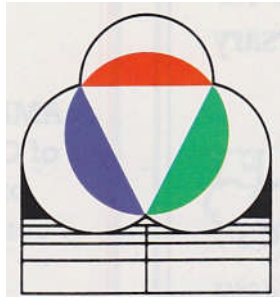
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