Eye of the World: John L. Baird and Television (part 2)

By Malcolm H. I. Baird

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IN THE FIRST ARTICLE *of this series,[1] Adrian Hills has skilfully brought us through John Logie Baird's early life to the "birth of television," the first public demonstration in 1926. In this part I will write of the years from 1926 until my father's death in 1946, and also comment on how the perceptions of his work have changed since 1946. This article is dedicated to the memory of my mother, Margaret Baird (1907-1996).*

Early Television Achievements

The first public demonstration of television, in the cramped London attic room in January 1926, marked a turning point for Baird. One of the scientists at the demonstration was heard to comment "Well, he got it right. It's only a matter of .s.d. to carry on developments." Public interest was immense and the small company that had been formed six months earlier, Television Limited, was able to expand. One of its first recruits was the business manager, a genial Irishman called Oliver Hutchinson. He and the outspoken journalist Sydney Moseley fed the public interest by writing optimistic articles in the press, to the effect that television would soon take its place in the home along with radio; but the plain truth was that television had some way to go before this could happen. Early television pictures were about the size of a business card and because of the low definition, the pictures were limited to head and shoulders. As Dr. Samuel Johnson said in another context, "the wonder is not that 'tis done well, but that 'tis done at all." Despite the limitations of these early images, it was possible to recognize individuals and to pick up changes of expression. This past April in Toronto, visitors to the "Watching TV" exhibition at the Royal Ontario Museum had an opportunity of checking for themselves, by viewing a reconditioned Baird "Televisor" of 1930.

Seventy years ago, public broadcasting in Britain was only legally possible through the BBC. Its domineering and puritanical director, Sir John Reith, was afraid of television[2] and his technical staff took their lead from the top and quibbled about the picture quality. It was only after much pressure from Hutchinson and Moseley, and a parliamentary committee hearing, that the BBC agreed to begin experimental transmissions in 1929. During this period of pressure politics, Baird himself continued to focus on research and development. Although the news media were enthusiastic about television, Baird was criticised in the prestigious British scientific journal *Nature*[3] for not giving out enough technical details of his invention. In reply,[4] he pointed out that such details were the subject of patent applications and would be released in due course.

Baird's worldwide monopoly of television was broken in April 1927 when the [US] Bell Telephone Co. sent a mechanically televised message from Herbert Hoover (soon to be president) by phone lines from Washington to New York, a distance of 200 miles. This event acted as a challenge to Baird and over the next few years he achieved a remarkable series of "firsts" in television history. In May of 1927 he ran a television transmission from London to Glasgow by phone lines -- a distance of 435 miles, more than twice that of the Bell transmission.

Later that year, Baird was joined by his first engineering assistant Ben Clapp, who was experienced in the new techniques of short wave radio. Radio waves of about 40 metres length could be sent over very long distances because they were reflected around the earth's curvature by the ionosphere, under climatically favourable conditions. Early in 1928, Clapp and Hutchinson sailed to New York with crates containing a television receiving apparatus; this was set up at the home of a radio enthusiast in Hartsdale, just north of New York City. After some initial disappointments, the first television pictures from London were received at Hartsdale on 8th February. This caused a sensation on both sides of the Atlantic, and the *New York Times*[5] compared the event to Marconi's sending of the letter "S" by radio across the Atlantic, 27 years earlier.

In July 1928, Baird demonstrated colour television; this still employed the mechanical scanning method, but the scanning wheels contained three spirals of holes with three filters in the primary colours. In this way, three separate coloured pictures were transmitted in rapid succession; the persistence of vision caused the eye of the viewer to "mix" the three primary pictures, so that a coloured moving picture was perceived.

Later, a primitive system of stereoscopic (3-dimensional) television was demonstrated, and it was also shown that television could be recorded on a wax disk and replayed. Some of the old plastic pressings for the disks were played back over 50 years later, using special equipment[6].

The early television pictures were only a few square inches in area and Baird was under pressure to provide something more comparable in size with the cinema screen. This was achieved in 1930 in a demonstration of "large screen television" (in fact 6 ft x 3 ft) from the Baird studio to an audience at the London Coliseum Cinema. The screen consisted of an array of 2100 small flashlamp bulbs. Celebrities beat a path to the studio to appear on the new medium, and the cinema drew packed houses. A year later, the Derby horse race was televised and sent by phone line to the Baird studio and to the experimental BBC transmitter. This was the first public "outside broadcast" of television.

Visits to the USA and Germany

The hesitations of Britain's monopoly broadcaster, the BBC, led Baird's company to explore international possibilities. In 1928 a Baird subsidiary was set up in the USA where there were already many experimental TV stations, and in 1931 Baird made his first and only visit to the USA. He received a VIP reception in New York, and entered negotiations for a joint TV venture with Donald Flamm, owner of radio station WMCA. The license application was at first well received by the Federal Radio Commission, but it was eventually rejected after an appeal from a rival radio station on the grounds that no "foreign influences" should be allowed in the broadcast media! If the FRC had accepted the application, Baird might have stayed on in the USA and the history of television would have been very different[7]. However, his American visit was not entirely wasted, since Baird invited his girlfriend Margaret Albu over from England, and they were married before a judge. No relatives from either side were present at the ceremony, but the marriage was a happy one lasting until Baird's death in 1946.

In Germany, the authorities' approach to television was much more sympathetic than that of the BBC. In 1929 a company called Fernseh AG was formed with 25% ownership assigned to each of three German companies, and 25% to Baird's Television Limited. For a few years there was a useful collaboration and experimental transmissions were sent from Berlin to a specially built receiving station in North London, near Wembley Stadium. Relations between Baird and Fernseh became difficult after the Nazis came to power, and essentially broke off in 1935 when all television research in Germany was abruptly placed under military control.

Cinema Television

On his return to London from his American visit in January 1932, Baird found that his company had changed hands. The new majority shareholder was Isodore Ostrer, who also owned the Gaumont British chain of cinemas. This led to a growing emphasis on large screen projection television in cinemas. Ostrer and many others in the cinema industry believed that television was an opportunity, rather than a rival to be feared. The public could be attracted to the theatres by a live telecast (for instance of a sporting event) which could then be followed by a regular feature film.

The 2100-lamp screen which had been demonstrated in 1930 was replaced by a "flying spot" method, with the picture being traced out in strips by a powerful beam of light deflected on a rotating mirror drum. This technique was successfully used in the live showing of the 1932 Derby at the Metropole Cinema, Victoria. The overall picture size was 9 ft wide by 7 ft high [2.7 x 2.1m] and it was formed by joining three pictures 3 x 7 ft [0.9 x 2.1m] sent over three separate telephone lines. By the late 1930s electronic projection television receivers had been developed by Baird, but cinema television was stopped after the start of World War II. It was resumed in some of the London theatres for several years after World War II, under the aegis of the Rank Organization; but the demand for cinema television fell off as the private ownership of television sets increased. Although television has not been adopted in movie theatres, the showing of films on television has become a big business; Rank Cintel (which had evolved from Baird Television) is one of the leading manufacturers of telecine equipment.

The Rise of Electronic Television

In June 1908, the Scottish scientist Alan Campbell Swinton wrote a letter to the journal *Nature*, suggesting that the newly discovered properties of the electron could provide a means for "Distant Electric Vision." Three years later, he gave a remarkably prophetic lecture in which he outlined a detailed scheme on these

lines[8]. The proposed system was to be entirely electronic with the receiver featuring a cathode ray tube in which a beam of electrons can be deflected by a varying electrical field, with their motion being visible as lines on the phosphorescent screen of the tube. The specification of the camera was more vague. Although Campbell Swinton's ideas were only theoretical, they pointed to an obvious advantage of electronic television, namely that a beam of electrons can move essentially instantaneously without any of the mechanical problems associated with rotating disks. But experimental progress towards electronic television was painfully slow, and as late as 1924 Campbell Swinton stated[9] that electronic television would be so costly to develop that it would be hardly worthwhile! It is known that Baird read this article which may have confirmed his belief that the most feasible ways to the first television picture was through mechanical techniques. His main competitor in this area was the American pioneer, Charles Francis Jenkins.

While Baird was gaining headlines in the late 1920s, two individuals in the USA were starting to make real progress with electronic television. The Russian-born Dr. Vladimir Zworykin had obtained the financial and technical backing of the Radio Corporation of America for his researches on an electronic camera, the Iconoscope. A more colourful character was Philo T. Farnsworth, a largely self-taught young man from Utah, who obtained funding from private investors for his image dissector camera. By 1929, Farnsworth was sending silhouettes through his camera, with the pictures being received on a cathode ray tube. This marked the beginning of years of rivalry and patent litigation between Farnsworth and RCA, the David and Goliath of electronic television. After many years, Farnsworth won his case against RCA, but his small company could not compete as a television set manufacturer and Farnsworth died an embittered man in 1971. RCA went on to gain a dominant position in the United States television industry despite the loss of face involved in having to license Farnsworth's technology.

Rival Systems and the First High Definition TV Service

For several years after Baird's breakthrough in 1926, the large British radio companies merely observed the progress of television without participating. Then in 1930 the Marconi Wireless Telegraph Company (MWT) began a research program on the use of television to send text, in particular news messages. Electrical and Musical Industries (EMI) were more directly interested in television, and in 1932 they developed a relatively high definition (180-line, 25 frames/sec) mechanically scanned system for transmitting cine film. Cathode ray tube receivers were employed. The year 1932 also marked the conversion of Baird to the use of cathode ray tube receivers.

The only public transmissions of television in 1932 were those of the BBC which were of 30-line definition, using the regular medium wave broadcast frequencies also known as the AM band. This had the advantage that it could be received by simply connecting a television apparatus (the Televisor) to a regular AM radio, and the signals could be received all over the UK and in parts of Europe. The major disadvantage of the AM band was that the medium waves did not provide enough bandwidth for higher definition pictures; in lay terms, the medium waves could not carry the immense amount of information needed for such pictures. In order to broadcast television at 180 lines or higher definitions, it was necessary to use very short waves of about 5 to 10 metres wavelength. The BBC was reluctant to spend a lot of money on new transmitters, and few people could afford to buy short-wave receivers in the depression era. So there ensued a period of "experimental" short-wave transmissions with Baird and EMI in rather petulant rivalry for the favour of the BBC. At this time the Baird company moved to premises at the Crystal Palace, a huge 80-year-old exhibition building located on Sydenham Hill, in the southern suburbs of London. The short wave antenna was erected on the top of a water tower at the Crystal Palace site.

Early in 1934, EMI and the MWT Company decided to pool their television resources to form a new company, Marconi-EMI Television. This was serious competition for Baird, who had earlier come close to merging with MWT. The new Marconi-EMI combine had two major assets: the large research team from EMI, ably led by Dr. Isaac Shoenberg; and the electronic patents and technology (including Zworykin's Iconoscope camera) which were available to Marconi from RCA. Dr. Shoenberg and his team lost no time in developing the Iconoscope and after some modifications it was rechristened the Emitron.

Meanwhile, Baird asked the American pioneer Philo Farnsworth to come over to Britain to demonstrate his image dissector camera. Despite an accident in unloading one of the crates of the equipment from the ocean liner, agreement was reached between Farnsworth and Baird for licensing and development of electronic cam-

era technology. The Farnsworth-Baird agreement was to some extent analogous to the arrangement between R.C.A. and Marconi-EMI. But although there was no doubt about the technical abilities of Farnsworth and Baird, both of their companies were financially weak. Baird Television had sold a few thousand of their 30-line "Televisors," but the company depended very much on the patience and the deep pockets of its investors. On the other hand, Marconi-EMI were given a generous budget from the huge revenues of its two parent companies.

The British government set up a committee to "advise on the relative merits" of the different television systems. It was chaired by the Postmaster General, Lord Selsdon, and composed of representatives from the Post Office, the BBC and scientific bodies. After much deliberation the Selsdon committee recommended that the BBC should start a high-definition television service on November 2, 1936, with the Baird and Marconi-EMI systems to operate on a trial basis, on alternate evenings. Picture definition was now set at 240 lines (Baird) and 405 lines (Marconi-EMI) with all signals being sent out on short wave from the BBC's new transmitter at Alexandra Palace in North London. Receivers were therefore built on a dual standard, with a single switch for the viewer to change the circuits between the Baird and Marconi-EMI systems.

In preparation for the new service, the two systems were demonstrated at the Radio Exhibition at Olympia in August. The Baird flying-spot scanner worked very well in transmitting film, but under studio conditions it required almost complete darkness except for the intense strobe-like scanning beams. The Marconi-EMI Emitron camera was better in the studio, despite some reliability problems. Although only two companies were competing for the transmission system, seven companies were exhibiting receivers. These ranged from "table models" to large console models and their prices ranged from about £50 to over £100. Considering that the average wage in 1936 was about £4 per week, it was obvious that ownership of television receivers would be restricted to the very rich.

The world's first high-definition television service opened on November 2nd 1936 with very little fanfare.[(10)] The programme opened with a few speeches by the Postmaster General and other dignitaries, lasting a total of 15 minutes. Baird was not part of the platform party and was relegated to the audience, to his considerable annoyance. The short opening ceremony was followed by an evening of typically low-budget programming. Television was not yet a mass medium and total receiver sales did not pass the 1500 figure until the summer of 1937. It is likely that fewer than 1000 television sets were switched on for the November 1936 transmission.

On the technical side it soon became obvious that there were difficulties with the Baird camera system, or rather systems. The flying-spot system, with its dazzling lights and relatively immobile camera, was only used on some evenings. On other occasions, an electron image camera developed from Farnsworth's equipment was used. A third alternative was the intermediate film process which relied on the fact that Baird's equipment did a very good job in televising film. Effectively, this principle was used in producing "live" television by filming the scene on 16 mm film which was then fed into a series of tanks for developing and printing, and scanned (still wet) for television. The processing delay between filming and appearance of the image was about a minute. This ingenious system was bedevilled by problems such as leakage of photographic chemicals on to the studio floor! The most promising of the three methods seems to have been the electron camera, but much of this equipment was destroyed in a disastrous fire at the Crystal Palace on November 30th. The Baird family home was about a mile from the Palace and as an infant I was held up at the window to see the blaze, but I have no memory of it. By February 1937 the advisory committee had decided in favour of Marconi-EMI's transmitting system.

Baird was deeply embittered by this decision, but his fellow-directors in the company were not too worried. For the first time there were regular high-definition broadcasts and this meant a growing market for receivers, with the Baird models holding a reasonable market share. With encouragement from Isodore Ostrer and the Gaumont British cinema chain, Baird resumed work on cinema television. Small, very bright cathode ray tube receivers were developed with the capability of projecting pictures on a large screen. Typically, two of these receivers would be carefully lined up so as to project each side of the screened picture.

In 1938, the Australian Radio industry invited John and Margaret Baird to visit Australia with VIP treatment and all expenses paid. The trip included the 4-week sea voyages in each direction, and my mother recalled it as the only real holiday she ever had with my father!

High Definition Colour TV

Britain declared war on Germany on September 3 1939. Two days earlier, BBC television had been abruptly shut down, and the British television industry was out of action for the duration of the war[(11)]. Baird Television Ltd. went into liquidation, and Baird found himself to be, in his own words, "a free agent." Sydney Moseley and Donald Flamm urged Baird to move with his family to the United States where he could continue his research in better conditions, but he politely declined. However his first concern was to move his family out of London, and my mother and sister and I went to Cornwall, 250 miles west of London, where we stayed until 1945. Baird himself had become very interested in high definition colour television and he continued to work, at his own expense, in a small private laboratory next to the house at Sydenham. He retained the services of two technicians, W. Oxbrow and Edward Anderson; later in the war, only Anderson remained. Most of his other technical staff had been conscripted for service in the new radar stations being set up around the southern and eastern coasts of England.

Baird set his sights on a picture definition of 600 lines. Scanning was carried out by an electronic "flying spot" method, similar to that used a few years earlier in cinema television demonstrations. Some "mechanical" operation was still included, in the form of a set of 3 rotating primary colour filters, on the same principle as the first colour television in 1928. This was demonstrated to a few reporters on a 2.5 by 2 foot [75 x 60cm] screen in December 1940. Publicity was however minimal, as this was in the darkest time of World War II. Another idea from 1928, stereoscopic television, was also developed on high definition (500 lines) in colour, and successfully demonstrated in late 1941. This technique did not require the wearing of special glasses by the viewer; but it was necessary for the viewer's head to stay in one position to get the best stereoscopic effect!

Baird's crowning achievement in colour television was the Telechrome, which was the first colour tube to dispense entirely with mechanical devices[(12)]. The Telechrome tube was spherical, with a flat mica screen in the middle. One side of the mica was coated with an orange-red fluorescent coating, and the other side with a blue-green fluorescent coating. Pictures were formed electronically on each side of the sheet, and a colour picture was visible because of the transparency of the mica. The Telechrome was publicly demonstrated in the summer of 1944; press coverage was very favourable, but the event was considerably dwarfed by other news such as the D-day invasion of Europe, and falling of flying bombs on London. I remember seeing the Telechrome early in 1945 and the picture was comparable in quality to today's colour television. After Baird's death in 1946, no one else continued the work at Sydenham. The house was sold, Anderson moved to the USA and the equipment seems to have disappeared.

The Secret Life of John Logie Baird

The year 1926 marked the breakthrough for television, but in that year Baird also took out a patent [(13)] on something slightly different. The specification called for the scanning of an object with a directional beam of ultra-short radio waves; the reflected waves were then picked up by a suitable receiver and the amplified signal was combined to form a picture of the object. This is what we now describe as radar, with the ability to see objects through darkness, cloud and fog. Why was this discovery not publicized by Baird on a par with television?

The question has been answered by Dr. Peter Waddell of the University of Strathclyde, who has found files of official correspondence from the 1920s and 1930s, formerly classified, describing visits of Air Ministry and Admiralty personnel to Baird's laboratories. There is little doubt that Baird was placed under a "gag order" on many aspects of his research. However, a few pieces of firm information have emerged. In 1939, Baird Television fitted out a French bomber with an airborne television camera for reconnaissance purposes. This used a miniaturised version of the intermediate film process, which provided not only a television signal for transmission to the ground base, but also a filmed record of the observations from the aircraft.

Baird's refusal to move to the USA at the outbreak of World War II may well have been due to his involvement in secret work. During the war he received £1,000 per year from Cable and Wireless Co., the crown corporation which controlled all official communications in Britain. The services performed for this fee are still not known exactly, but his work is believed to have been on the use of television methods for high-speed coded signalling. Research is continuing on this aspect of Baird's life.

The Final Illness

My father had never enjoyed good health. A serious illness when he was two years old had left him with weak lungs and poor circulation. One of my earliest pre-war recollections of him in the garden of the house in Sydenham was a muffled figure wearing an overcoat, scarf and hat -- on a bright summer day! Early in World War II he suffered a mild heart attack, but after a few weeks he was back at work in the difficult conditions of the London blitz, with inadequate food and heating, and little technical assistance. By the end of the war he was very tired, but a new Baird Television Company was formed to manufacture television receivers and promote cinema television. The family moved to a rented house at Bexhill, on the south coast, with the idea that my father could benefit from the fresh seaside air but still be in commuting distance from London. He told my mother that if he could "hold on" for a few more years, the family's fortune would be made; there was even talk of a knighthood. Unfortunately this was not to be the case. In February 1946 he suffered a stroke and recovery was slow. He craved heat, and the electric fire in his room was run 24 hours per day, with an alarming effect on our power bills. He continued to keep in close touch with his company in London by phone (more large bills) and his last project was the televising of the Victory Parade in June 1946 for showing in three London Cinemas. A few days later, he died in his sleep.

The 50-year Aftermath

My father's death had a devastating effect on my mother and my sister and me. Matters were not improved by the small size of his estate, just a few thousand pounds. The family lawyer (whom we had thought of as a good friend) turned out to be a crook and it took years to recover the estate from his clutches. The only other source of income for my mother was a modest pension provided by the Baird Television Ltd.; this continued to be paid by the companies which later absorbed Baird Television.

In 1947 the family moved to Scotland, to Baird's birthplace "The Lodge," in Helensburgh. The house then belonged to Baird's older sister Annie and it had changed little since the 1900s. Old books, pictures and papers, and the primitive telephone switchbox from 1900, provided constant reminders of John Logie Baird. On one of the windows, he had scratched his name with a diamond cutter. My sister Diana and I were fascinated by the memorabilia and the Victorian atmosphere of the house. Aunt Annie herself was very much a Victorian too, having been born in 1883, but she was a kindly character with a subtle sense of humour. My mother was never happy in the cool damp climate of Helensburgh and she pined for the warmth and sunshine of South Africa where she had been born and raised. Eventually in 1958 she went back there to live, and for the next twenty-five years she resumed her musical career as a teacher and performer.

Figure 1: John Logie Baird

The public image of John Logie Baird has fluctuated in the 50 years since his death. In 1952 a biography appeared by Baird's old friend Sydney Moseley, an outspoken journalist who put his viewpoint into everything

he wrote. The subtitle of his book was "...the Romance and Tragedy of the Pioneer of Television." Moseley's theme was that Baird's life had been romantic but ultimately a failure, because his mechanical system was replaced by electronic television. This theme was taken up by others. In 1957 an attempt to convert the family home in Scotland to a public museum of television was thwarted by some powerful figures in the British government who said bluntly (but in private) that "Baird did not invent television." The chorus of denigration was taken up by one of Baird's former engineers who had since risen to a high position in the BBC. The tide began to turn when the right to use "Baird" as a tradename passed to Radio Rentals,(14) which had made a fortune with television rentals in the post-war years. Radio Rentals sponsored several lavish public events, with my mother as the guest of honour, aimed at refurbishing Baird's reputation. Encouraged by this, my mother wrote a short biography which is a fascinating record of the human side of Baird's life.

In 1974 a mechanical engineering lecturer at Glasgow's University of Strathclyde, Dr. Peter Waddell, contacted me with some questions about Baird. He had been given the job of organising an exhibition at the University in January 1976, commemorating the 50th anniversary of the first public demonstration of television. The exhibition was a great success, and Dr. Waddell's interest in Baird continued to grow. Unlike earlier biographers of Baird, Dr. Waddell is an accomplished technical researcher in his own right. His expertise on optical imaging methods has helped him to wade through the technicalities of television and present them in reasonably intelligible lay terms. His first biography, written in collaboration with the journalist Tom McArthur, fully covered the achievements with mechanical television and it also brought in much new material on Baird's electronic colour television, radar and the use of television technology in coded signalling. This book and its updated sequel "Vision Warrior" have generated much controversy. For example, surviving employees of the Baird company in the late 1930s have been sceptical about the extent of Baird's involvement in radar, because they knew nothing about it at the time. In 1984, after much prodding by journalists, the British Ministry of Defence issued a terse statement that they were unable to comment because "much of [Baird's] work is still classified." In 1992, my mother was awarded an honorary degree by the University of Strathclyde, in recognition of the achievements of one of the University's greatest alumni. This event was one of her last public appearances. She died in July 1996, fifty years after the death of John Logie Baird.

As an educator and engineer (though not in the television area), I have been trying to maintain a balanced view of the several schools of thought that have arisen about my father and his work. A few people still brand Baird as an outright failure, simply because the world's first television system was mechanical and it was superseded by electronic technology. That is rather like saying that Marconi was a failure because his radio transmitter used the primitive spark-gap method. It should also be noted that mechanical methodology is still widespread in VCRs and radar installations. In the U.K., telecine equipment for showing movies on television is supplied by Rank Cintel which has built on the expertise of part of the Baird Television Company which it took over in 1940. The detractors of Baird also tend to overlook the fact that he started to switch to electronic methods as early as 1932, and his work on electronic colour TV in the 1940s was at the cutting edge, far ahead of its time. Last but not least, there are the important but secret aspects of Baird's career, involving spinoffs of television such as radar and coded signalling.(15)

While the historians have been arguing, a new generation has grown up which knows virtually nothing about the early history of television and its *dramatis personae* among whom Baird must take a leading position. This is a sad situation, considering that television has had more cultural impact than any other 20th century invention. I am doing what I can to encourage new efforts of the media, in particular television itself, to highlight Baird's contributions. Only two recent productions have dealt with these in any detail. A low-budget but well produced docudrama, *I Chose Madness*, was shown by the BBC in 1988 but not seen in North America. Two years ago, a short documentary *TV is King* featured Baird among the other pioneers of pre-1939 television; this has been seen in many countries. There is a good case now for making a detailed multi-part series. This would be not merely an educational project but it would have great drama, confirming the adage that truth is stranger than fiction.

(Conclusion of the John L. Baird articles follows in the Fall 1997 issue)

Figure 2: Margaret Baird with J. L. Baird's associates (1957)

Notes

1. Hills, Adrian, "Eye of the World: John Logie Baird and Television: Part I," *Kinema*, No.5, p.5, 1996.

2. Lord Reith, television interview with Malcolm Muggeridge, November 1967, reprinted in *Muggeridge Ancient and Modern*, BBC Publications, 1981.

3. Editorial, *Nature*, Vol.119, p.73-74 (January 15, 1927).

4. Baird, J. L., letter to the editor, *Nature*, Vol.119, p.161-162 (January 29 1927).

5. News item, *New York Times*, 11 February 1928.

6. McLean, Donald F., "Computer-based analysis and restoration of Baird 30-line television recordings," *Television*, Vol.22, p.87-94 (April, 1985).

7. Baird, Malcolm H.I., "Baird in America," *North American Newsletter of the Royal Television Society*, Summer 1996.

8. Campbell Swinton, A.A., "Scientific Progress and Prospects" (presidential address to the Röntgen Society), *Nature*, Vol.88, pp.191-195 (1911).

9. Campbell Swinton, A.A.,"The Possibilities of Television with Wire and Wireless," *The Wireless World and Radio Review*, pp.51,82 and 114 (April 9,16 and 23, 1924).

10. This event was ignored by David Sarnoff, President of R.C.A., who proclaimed "The Birth of Television" at the New York World's Fair 3 years later!

11. Germany continued throughout the war with television on a small scale. John Swift in his book(1950) tells how the television signals from the Eiffel Tower in Paris were monitored for intelligence purposes on the south coast of England in 1943-44.

12. In later years, some colour TV systems such as that of CBS in the USA, continued to use rotating colour filters. The camera which televised the moon landing in 1969 used rotating colour filters.

13. Baird, John Logie, and Television Limited, "Improvements on or relating to Apparatus for Transmitting Views or Images to a Distance," British Patent 292,185, App. December 21, 1926.

14. Radio Rentals was later taken over by Thorn Electrical, and in 1979 Thorn merged with EMI. Thus, the

right to use the name "Baird" is now held by the corporate descendant of Baird's great rival in the 1930s! Thorn-EMI have treated the Baird family with the utmost generosity and courtesy.

15. In 1983, my sister Diana was attending a television function in London and met J. D. Percy, a former Baird employee who had helped to develop the "intermediate film" process in 1935-36. Subsequently, Percy worked on defence contracts. He warned Diana against pursuing enquiries about Baird's secret work. More recently, Tom McArthur (co-author of 2 recent books on Baird) reports having received similar warnings from anonymous men in Glasgow pubs. This sensitivity is surprising, so many years after the events in question.

Author Information

Malcolm H. I. BAIRD was born in 1935 at Sydenham, a suburb of London, U.K. He studied at Glasgow and Cambridge Universities and then spent some time working in the chemical industry. Since 1967 he has been with the Department of Chemical Engineering at McMaster University in Hamilton, Ont., Canada.