

The Coronation of Queen Elizabeth II

By Richard S. O'Brien

A Project of the Archival Papers and Historical Committee

The mission of the SMPTE Archival Papers and Historical Committee is partially stated as follows: "To collect facts and assemble data related to the historic development of the motion picture and television industries (and) to encourage pioneers to place their work on record in the form of papers for publication in the Journal." This paper, by a pioneer in the field of television broadcast engineering, is a contribution from the committee.—Edgar A. Schuller, Chairman

The Columbia Broadcasting System (CBS) Television network sent three members of its engineering department to England to record the BBC broadcast of the Coronation of Queen Elizabeth II for re-broadcast in the U.S. This event took place 50 years ago, on June 2, 1953. We were joined by an edit team from CBS News as well as several key executives. This was before the invention of videotape and satellite relays—in fact, before there were even satellites or jet airliners flying the Atlantic! At this time, the picture medium was television film recording. Sound was recorded on sprocket-driven magnetic film, and transportation was by propeller-driven aircraft. We did it! CBS had two shows on the air, across the U.S., on the same day as the actual coronation ceremony. It was a great adventure, and it is fun to recollect how we did it and to recall some of the problems we encountered.

Fifty years ago, as a senior project engineer in the CBS Television engineering department, I thought things were moving pretty fast. Typically, we went from one project to another without much time to think about it. For example, on November 15, 1952, I attended a huge party in Hollywood, CA, for the dedication of Television City! The design and construction of its technical facilities had been my project. The party was a big affair with the governor of California, Earl Warren, and all the big names from Hollywood in attendance. My wife, Marjorie, and I thought it was a nice party because it was also the day that we celebrated our tenth wedding anniversary!

After the project was completed, we returned to our home in New York, and I went to my office and learned that two other engineers and myself were going to England to record the formal coronation of Queen Elizabeth II, scheduled to take place on June 2, 1953. I would be in charge of the project team, which simply meant I had to maintain the bank account—in pounds, shillings, and pence! I also had to write and deliver a paper on Television City at the annual International Radio Engineers (IRE) Convention in New York City, before we left for England.

Concept

Howard Chinn, director of audio and video engineering for CBS (my boss at the time), and our department head, Bill Lodge, in cooperation with the CBS news department, came up with the concept of how we would proceed.

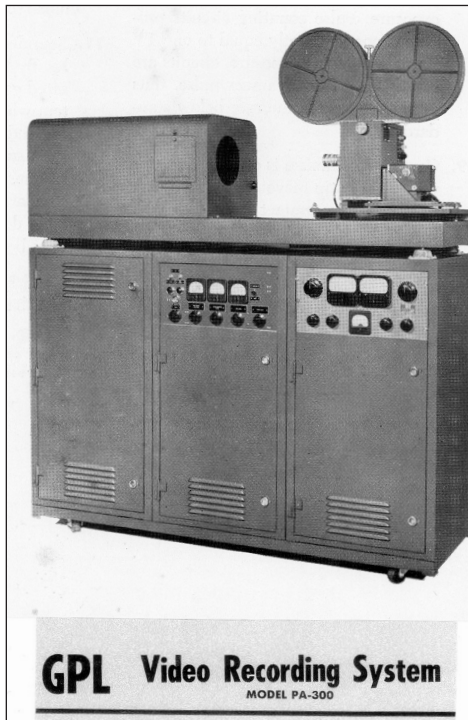


Figure 1. The GPL video-recording monitor with 16mm camera in place.

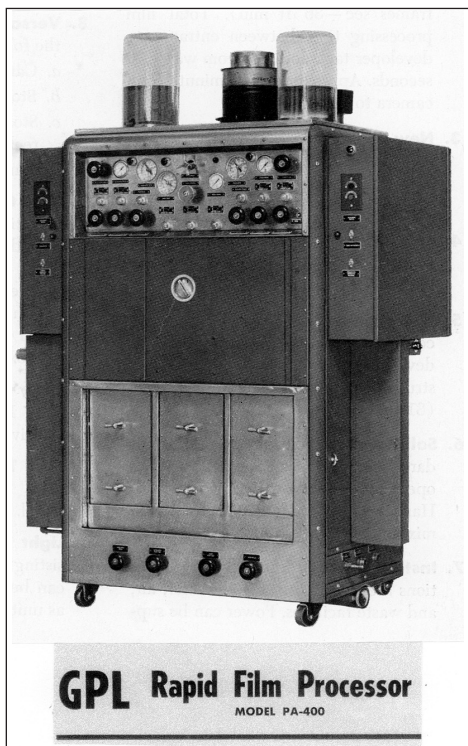


Figure 2. The GPL rapid processing unit. A film frame, entering on the left, went through processing, reversal, reprocessing, fixing, washing, drying, and waxing and emerged on the right in 42 sec.

Keep in mind that on this date in 1953 there was no videotape. Videotape was first used in late 1956 for the west coast repeat of the Doug Edwards news program. At that time, film recording was used as our medium. There was no satellite transmission, or satellites! Also, there were no jet airliners flying across the Atlantic—only propeller-driven planes. The only jet flights were from London to the Mediterranean on the limited-range British “Comets.”

The concept was to set up a recording facility at Heathrow Airport, London, and record the British Broadcasting Corporation (BBC) broadcast obtained from an off-air receiver or, if necessary, from a microwave feed. We would record two film copies with separate accompanying sprocket-driven magnetic sound recordings. CBS News would edit one film and sound at the London site, which would be put on a pool flight being organized by the BBC to get their film recording to the Canadian Broadcasting Corporation (CBC). The plane would land at Newfoundland, and we would meet it with a fast plane to fly the film to a special telecine playback facility installed at the Boston Airport. From there it would be fed to the CBS network.

The second film and audio would be put on board a chartered airliner fitted with editing tables, and the News editing team would produce a second show during their flight to Boston. This would provide a backup or an additional later show for the CBS network. All in all, it was a simple approach; we just had to do it!

Doing It

Our first meeting took place on January 28. My old project logbook shows that as its first entry. We made an agreement with General Precision Laboratories (GPL) to provide two of their recording cameras, monitors, and two processors. These were standard products (Figs. 1 and 2), but they had to be modified to be able to run on 50 cycles/sec (Hertz) British power and to record British television signals that were based on 25-frame (50 fields) and 405-line standards.

GPL set up the system



Figure 3. The old control tower at London's Heathrow Airport. Our operating space was behind the second floor windows.



Figure 4. Equipment was hoisted by a fork-lift through space opened by knocking out a side window.

with a 50-cycle power generator with British TV signals in a building in Ossining, NY. Their plant location was in nearby Pleasantville, at the old Tommy Manville Estate. Our inspection started on the weekend of February 28 to March 1, and it was a long weekend! There were many things to be fixed. For example, one of the monitors was a production model being delivered to CBS for later use in Hollywood and the other was the GPL prototype. The production circuits were not the same as the prototype, but under considerable pressure, the prototype was brought up to date—almost!

After a number of late nights and weekends, we accepted the equipment and moved it to the CBS building at 485 Madison Avenue in New York City. The equipment had to be inspected by a customs broker as it was packed, because it was going into England under bond and would have to be returned to the U.S. when the project was finished. Duty would have to be paid on anything that was left behind. We had a ten-page detailed list of the entire kit.

In late February, Bill Lodge was in London and made several important advance arrangements: He worked out a deal at Heathrow Airport for our operation, made plans with British Overseas Airways Corporation (BOAC) for the charter of a Boeing Stratocruiser, made contacts with key people at the BBC with whom we would work, and arranged our hotel accommodations.

On March 25, I presented a technical paper on Television City at the IRE Convention, and two days later we were aboard HMS Queen Mary with our equipment down in the hold—somewhere! We were ready to go!

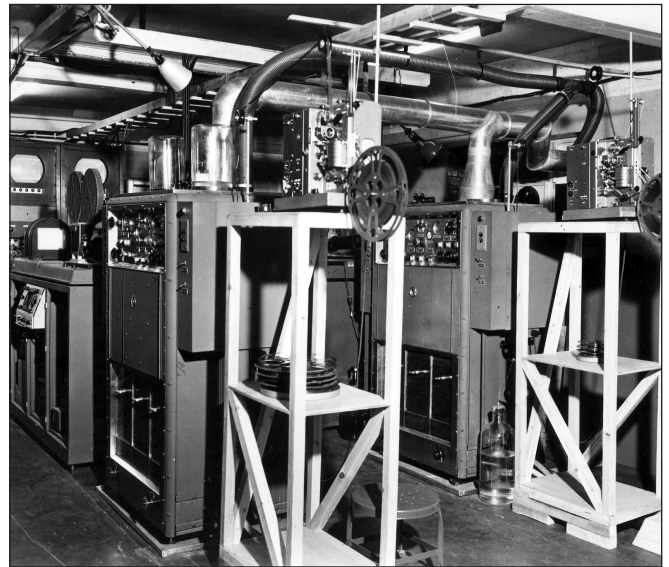


Figure 5. Film recording chain 1 is in the foreground and chain 2 is behind it. (L-R) The TV recording monitor with a Wall camera, the rapid processor and, on its output, a projector which provided a T+one-minute visual monitoring display.

Queen Mary

The trip across the ocean was comfortable except that the cabin Marjorie and I occupied was an inside space, apparently located just over the starboard, outboard propeller shaft bearing! Everything in the cabin vibrated!

We had frequent “project meetings,” which is what we called our meals! The two other engineers were Price Fish, who was in charge of the audio and backed me on video, and Bob Rheineck, our film engineer. Bob’s wife, Paula, and my wife, Marjorie, rounded out our party.

We arrived in Southampton on a Thursday afternoon where we met our customs broker, a young Englishman, who accompanied us on the train to London and put us on the correct train to our hotel out of town.

We immediately learned how things operated in England. The next day was Good Friday. No one was available on Friday, Saturday, Sunday, or Easter Monday! By calling their homes, we contacted a few of the men with whom we would be working, and we generally got the message that they would see us on Tuesday. We went into London on Saturday, obtained our driver’s licenses, saw a play, and had dinner.

Also, we were able to meet Bill Nicol and his wife, Gladys, by arranging for them to join us for dinner at our hotel. Bill, who was in charge of the communication facilities at Heathrow Airport, was a tremendous help on our project.



Figure 6. Dick O'Brien adjusting one of the recording monitors. Behind him, in an equipment rack, is one of the special Pye receivers.



Figure 7. Bob Rheineck with one of the film developers.

row of windows shown in Fig. 3. A new tower complex was under construction.

Incidentally, we drove roughly 12 miles from Windsor to Heathrow everyday; a section of the Bath Road was only three lanes wide. One morning Bob was driving and, having just surmounted a small hill, said, quietly, "all the best places are taken—what do I do now!" All three lanes had cars coming in our direction! Somehow our lane cleared but the expression became a watchword of the project—"all the best places are taken."

Work on our space by airport tradesmen began on April 9, but it

stopped at 3 p.m. for tea! We were able to get a side window knocked out so the equipment could be delivered on April 10. The shipping crates were hoisted into the space by a forklift, as shown in Fig. 4. Some were too large, so they had to be uncrated on the ground, and then just the equipment was hoisted. Unpacking had to be witnessed by customs agents, one of whom was a radio ham who had to see everything! It was a long day and it was 7 p.m. by the time everything was in our space.

The equipment had to be covered while the room was being modified, and we had to do assembly and

Windsor

Bill Lodge had done well in his choice of hotel. The Old House, designed by Christopher Wren, was on the Thames River, and our room overlooked the river. The maid came into the room every morning, woke us, and delivered a pot of hot tea and a pitcher of warm milk. The first thing I usually did after getting up was put a shilling in the coin-operated electric heater. It got to be quite a joke in the hotel that they had to unload the shillings from our heater almost every day in order to make change for us to feed more shillings. It was cold!

I would do a classic two-hand pour of tea and milk—half and half—bring my tea over to the window and look across the river at a sign that read "Courage!" Although it was just an ad for a popular British beer, it was a good word with which to start the day.

We were in a good neighborhood. The famous prep school, Eton, was on the north side of the river, and up the hill behind our hotel was Windsor Castle. Marjorie thoroughly explored all the public areas of the castle. One day while she was in the small village near the castle entrance, a limousine stopped next to her, and a little boy and his nursemaid jumped out. It was Prince Charles going into a store to buy a birthday present for his mother—the Queen!

Heathrow

Our space at Heathrow Airport was in an old control tower. We occupied the second floor space behind the



Figure 8. Price Fish at the audio recording facilities. A small announce booth is behind the little window on the left.

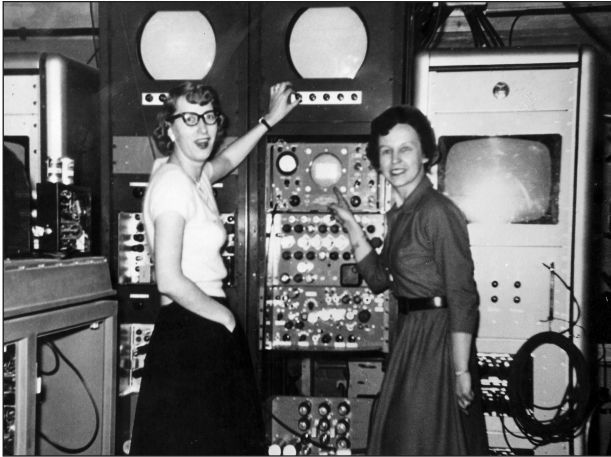


Figure 9. The real power behind the project—Paula Rheineck (l) and Marjorie O'Brien (r) at the equipment racks.



Figure 10. (L-R) Bob Rheineck; Dave Zelmer, a CBS news editor; Dick O'Brien; and Price Fish test the editing equipment operation on a flight test of the BOAC Stratocruiser.



Figure 11. On the program day, CBS newsmen had to push their car into the airport when it ran out of petrol!

preliminary checkout after the tradesmen finished their workday. Progress was slow, and it was difficult to get the various trades on the job at the right time. We had to worry about the cold-water plumbers, hot-water plumbers, and many other trades.

Every morning at 11 a.m. the crew went out for what was called their “elevenses,” where they took a break for 30 minutes to have coffee or tea. One day we arranged for a caterer to bring in coffee, tea, and goodies at 10:45 a.m. The workmen were most appreciative and profusely thanked us. I came back into our space a little after 11 o'clock, but no one was there—they were out having their elevenses! That was the end of catered elevenses!

Program Feeds

On April 10, we fired up the special Pye receivers and found a disaster! There was very bad noise and no usable off-air signals from the BBC broadcast transmitter, which was north of London at Alexandra Palace; Heathrow was west of London. The signal was not strong enough to counter the heavy noise coming from a large number of Teletype machines and related hardware in the tower and surrounding buildings. After much work by the Pye engineers, including erecting a high antenna pole, the problem was still not corrected.

During this time, I kept talking to the BBC microwave experts about how to get a feed. The engineers were very helpful, in particular, a man named Bridgewater. Although a profile looked good, it was quickly found that the microwave path from the Alexandra Palace site would not work. A gasifier tank was probably blocking the path. Early on, Bridgewater suggested a telephone exchange in the village of Slough, about 8 miles west of Heathrow, as the best bet. The problem was that no demodulated signal was available at Slough. The cable network feed went through and was amplified, but not demodulated until a few stations west. However, Bridgewater put in an order for the telephone company to provide a signal at Slough. He put us in touch with workers at the general post office (GPO) and at Slough. It was proposed to feed back a demodulated video signal on a spare coax, which would connect to our microwave. A first look at the feedback signal was not encouraging. It was noisy and not a good signal, but they promised to keep working on it.

In the meantime, an engineer in Bill Nicol's office told me there were coax cables from our tower to a direction-finding (DF) station site out in the middle of the airport. We

immediately went to check for a possibly usable off-air signal. The signals were bad at the DF site and no better at a nearby construction site for the new control tower. However, we went to a little shack about 1000 ft east and found good-quality off-air signals! The next day, May 9, the airport personnel laid out two 1250 ft coax cables and connected them to the lines to our tower. With a good antenna and booster amplifiers supplied by Pye, we were in business. Our shack acquired the name of a then currently popular stage play that we had seen in London—"The Little Hut."



Figure 12. Our Stratocruiser sitting at the loading spot. Our recording tower is visible under its nose.



Figure 13. Sig Mickelson, president of CBS News, and Reporter Edward R. Murrow lead the last-minute boarding parade.

We put in quite a few nighttime hours to check everything and make test recordings. However, we took Sundays off to visit the many historic castles, gardens, and other attractions.

The Facilities

Finally, installation was complete, the room modifications were finished, and we tested and tuned the facility. Many BBC staff engineers, vendors, and media visited, including our own CBS publicity people. I was told that I was on a CBS network-wide television program in the U.S., explaining what we were doing. Figures 5 to 9 show what the facilities looked like.

We rigged up a modification for the recording monitor to provide spot wobble. By means of an extra deflection coil on the picture tube neck, we were able to introduce a 15-MHz signal to provide slight vertical movement of the scanning beam. When properly adjusted, this filled in the space between the 405-rate scanning lines to provide a smoother picture. There was also a device in the equipment racks called a Crispener, which sharpened the horizontal resolution; this had been developed at the CBS Laboratories. With these modifications, we were able to make good recorded images.

Running the film processors was a demanding job. Bob continuously had to put fresh film cassettes on the camera and remove the output reels. Keeping the processing chemicals up to level also required constant attention.

Test Flight

On May 14, we conducted a test flight of the editing facilities installed in the British Overseas Airways Corporation (BOAC) Stratocruiser. The facilities had been installed in the passenger cabin by BOAC technicians. Figure 10 shows us at work during the flight. It was found that there were no problems editing at altitude. Incidentally, after the plane had taken off, the pilot came back into our cabin and said, "Mr. O'Brien, where would you like to go." I did not realize that we would have an airliner at our disposal for several hours. We headed north and may have gone to Scotland, but the clouds looked the same from above as they had over Heathrow.

On our return, we made an authorized low-level pass over London for a publicity photographer onboard. However, the cloudy day somewhat hampered his view.

Final Preparations

On May 18, I decided that the microwave feed from Slough was acceptable. We recruited licensed operators (from Marconi Ltd.), and our input signals were set. A week later, we suddenly lost the off-air signal as a result of anomalous propagation. Television broadcast signals on the same frequency as the BBC transmitter came in strongly from Holland, Belgium, or possibly Germany, and wiped out the BBC signal. Luckily, the microwave system was now working! On the day of the show there were good signals from both microwave and off-air. I used the microwave feed most of the time, but switched to off-air for part of the recording. The feeds were essentially equal.

On May 23, Bill Lodge arrived; he liked what he saw and went on to Paris for a couple of days.

On May 27, one of our Wall cameras jammed. Bob Rheineck found a stripped Bakelite gear in its drive. He called a friend at Movietone News in London, and they made a new gear and delivered it the next day. Friendships do pay off!

On May 28, we heard strong rumors that National Broadcasting Co. (NBC), which was located at Blackbushe Airport, further west, had their own British Canberra bomber and were going to beat us in getting a show on the air. Arrangements had been made by Radio Corporation of America (RCA) to have one of the NBC films carried on this plane, which was being delivered to the Venezuelan Air Force. At our project meeting in Howard K. Smith's London News Bureau office, Sig Mickelson, president of CBS News, said it looked like NBC had us on timing, but he thought our show might be of better quality, both technically and program-wise. Bill Lodge would not let us work on the Sunday before the event, so we drove him out to Blackbushe Airport and sure enough, there was a brand new Canberra in the NBC hangar!

The Day: June 2, 1953

Our equipment was turned on at 8:15 a.m. so that it would warm up in plenty of time. The newsmen were late because their car ran out of petrol and had to be pushed into the airport (Fig. 11). The pushers included the president of CBS News.

Throughout the coronation recording, the number one chain worked perfectly. We were a little surprised at how noisy the editing process was in the corner of our space,

but it resulted in a well-edited show for transport on the BBC-arranged British Canberra jet bomber, which departed from Heathrow. Chain number two had a few film transport problems, but still produced plenty of film for the show edited on our chartered Stratocruiser. Our plane was sitting nearby (Fig. 12), and the parade of people getting aboard was impressive, as suggested in Figs. 13 to 15.

Price Fish and I stayed behind to clean up the project, and anchorman Walter Cronkite, in our small announce



Figure 14. Don Hewitt (c), with editors Dave Tullen (l) and Dave Zelmer (r) going aboard.



Figure 15. Bob Rheineck carries the recorded film aboard.

booth, recorded voice-overs for use on follow-up shows. We turned off the system at 2 p.m., and almost everything was disconnected by nightfall.

In midafternoon, we received word that NBC's Canberra had returned to England. We liked to think that perhaps the BBC had allowed that to happen, to insure that no one would be on the air in North America with this very British show before the CBC.

Last Lap

The Canberra pool plane arrived in Newfoundland and our film show was transferred to a P51, a World War II fighter plane, flown by famous stunt pilot Joe DeBona. The movie actor Jimmy Stewart owned the plane. Another famous pilot, Paul Mantz, in his P51, flew NBC's second film. Our plane beat NBC's to Boston airport by a few minutes, but NBC had made a last-minute deal to take the CBC feed; ABC had previously arranged to take that feed. Both were on the air some minutes before the CBS show, but we had a good audience. When the Stratocruiser arrived sometime later, a second show was fed to the network at 10:40 p.m. EST.

A cable from Howard Chinn the next day said, "Pix wonderful. Sound perfect. Congratulations! NBC sound and pix stinko." That was a good enough wrap for us.

By the end of the week, customs inspection and packing was about 85% complete. We lost only one thing: an electric hand drill. I hope the guy who swiped it didn't blow himself up when he plugged a 110V tool into the British 220V power system!

On Saturday, we were on the balcony outside our hotel room with many other hotel guests to wave to Queen Elizabeth and Prince Philip as they crossed the Eton Bridge on their return to Windsor Castle. They waved in response. That was my only live sight of the Queen. Windsor was said to be her favorite residence. The last entry in my project log was dated June 6.

Back to Earth

Marjorie and I took a quick bus trip around some of the

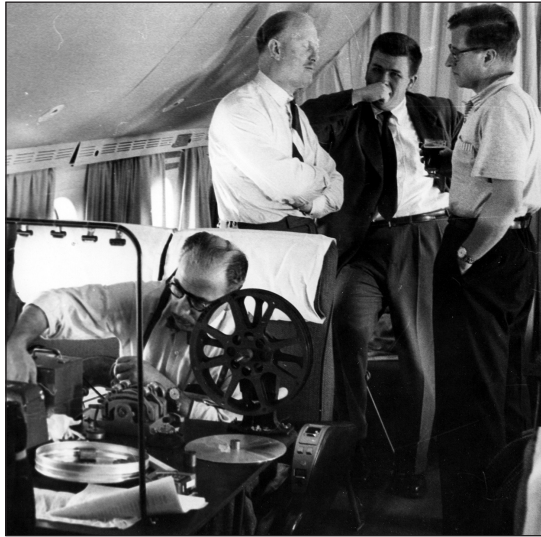


Figure 16. Dave Tullen editing in-flight, while (L-R) Bill Nicol, Bill McCluire of CBS News, and Bill Lodge converse.

continent, ending in Paris where we met Price Fish. For our return trip on the HMS Britannic, we boarded at Cobb, Ireland, and were surprised to find this very British ship gaily decorated in honor of the Fourth of July!

By the time we returned to CBS, the coronation was no longer the major topic of discussion. The topic now was color television, and I spent the next two days at Philco in Philadelphia learning about the RCA camera that CBS was purchasing from Philco, now that field tests for the

National Television Systems Color (NTSC) color standards had been completed. My job now was to set up a studio in old radio Studio One to broadcast with both field sequential and NTSC cameras. But that is another story!

Memorial

With the passage of 50 years, only a few of the individuals named in this recollection are still with us. Let me dedicate these words to the good friends and associates who have gone on. It was a good show!

THE AUTHOR

Dick O'Brien retired from CBS in the early 1980s. He was involved in many major television projects beginning with the post-WWII CBS New York studios and master control in Grand Central Terminal, New York City; Television City in Hollywood; Broadcast Center in New York; and many owned-and-operated station projects.

O'Brien received a B.S. in electrical engineering from U.C. Berkeley in 1939 and attended Stanford University for two years—interrupted by Pearl Harbor and the war. He worked on radar countermeasures during the war and was overseas at the end of the European war.

O'Brien was on the SMPTE Board for 14 years, serving as Secretary for three terms. He received the SMPTE Journal Award in 1954, the SMPTE David Sarnoff Gold Medal in 1984, and an Emmy for Lifetime Achievement in 1993.