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This is a re-recording by Frank Gillard of
the questions put to Sir James Redmond
during the interview filmed on August 22nd 1990

SIR JAMES REDMOND INTERVIEW

at Sir James' home in Highgate,
the BBC History Archive

Its August 22nd 1990. This is Frank Gillard in conversation with
Sir James Redmond for BBC History Archive at Sir James' home in
Highgate.

^{James} Sir John joined the BBC in 1937 and by 1939 he was in the infant
television service so he was one of the great pioneers of BBC
television.

1. Tell us about the home, the original home, of BBC television, what place was it?
2. Well outside London though wasn't it?
3. What sort of transmitters were required? Were they conventional transmitters or were they very special?
4. Tell us about the characteristics.
5. Did your engineers have to have special training for television?
6. Tell us about the line standards and black and white and that sort of thing.
7. You must say it was in black and white. (Black and white)
8. How far did the station reach?
9. We ought to make it plain of course that it's not a day long service. The hours of output ~~weather permitted.~~ ^{were limited.}
10. Lets talk about the programme resources, ~~no~~ ^{now} studios. Whats' the studio situation? EMI studio Baird
11. And what about the cameras? EMI TRON Zworykin
12. Could you do fading and cutting and that sort of thing?
13. And focussing, wasn't that a problem?
14. Sounds a bit hit and miss, was it? [long gap here in the tape]
15. With floorspace of 2,000 square feet it must have been a very tight squeeze sometimes in the studio.
16. Of course you did also have the very large studio outside the building didn't you.
17. Well of course you had to make use of whatever facilities you had to hand.

18. Now, in addition to studios of course you had, you were very strong on outside broadcasts right from the beginning.
19. And sports events.
20. Then what about film?
21. Yes. ^{Was there a} ~~What sort of~~ sense of being some kind ^{of} elite body at Alexandra Palace?
22. Did the engineers ^{and} ~~or~~ the programme makers work in harmony or did the programme makers make outrageous demands on the engineers?
23. Did you, ~~you~~ ever have time to sit back and reflect on what television might become? ^(What) the enormous influence in the land?
24. But you must have been greatly frustrated by lack of finance and I suppose even lack of equipment because manufacturers weren't turning out the stuff in quantities were they?
25. Was there ^a feeling of resentment at all, any sense of neglect even by the BBC centrally with Broadcasting House ignoring television or just putting up with it, or was it encouraging?
26. How many television sets do you suppose there were in use at the time when war broke out?
27. What did these sets look like? [?] Were they enormous things?
28. But what was the size of the screen and was it bright or dim, [?] did you have to draw the curtains?
29. It's hard to imagine ^a the family gathered round a dim little 7 inch picture.
30. Public interest was great? ^(long gap on tape)
31. Well during the ^{war} the television service was off the air, ~~Then~~ war ends and back we come again and all you have to do is take off the dust covers and start up?
32. And tell us about the limitations on the development of television. ~~Everybody~~ wanted television all over the country ^{but} which you couldn't ^{spread it} credit could you?
33. Because alongside this, the television service was extending its hours and it needed more studios and so we come to the acquisition of Lime Grove, ~~Tell~~ us about that?

34. But before then there was this rather highly centralised television service based in London, ^{Very} little coming from outside London isn't this true? Tell us about the regional development.
35. You did achieve ^{through some} those and very remarkable outside broadcasts, crossing the Channel for example.
36. Of course another notable outside broadcast was the Coronation. Were you involved in that at all?
37. And then of course in the mid 50's you suddenly ^{found} find you had brothers in arms, as it were, up against you.
38. And did you maintain decent relations with ITV engineers?
39. Were there problems, or relations, with the ITV over the sharing of premises, masts and sites?
40. I see. Up to this point or roughly up to this point television was a live medium wasn't it? Almost all production work had to be live but of course everybody was champing at the bit to have decent recording facilities of one kind or another (yes indeed) could you talk a bit about that?
41. Nothing less than a revolution though was it?
42. The next revolution, in the BBC television anyway, was the coming of the Television Centre.
43. This had been planned for a long time ahead I guess?
44. Would you say that you over-estimated the need for studios?
45. Then, of course, Television Centre didn't come along much too soon because the BBC was faced with vast expansion in the 60's.
46. So when in 1963 or whenever it was the Government authorised the BBC to bring in its second television system, the line standard issue was already decided.
47. Problems though, I mean 625 line transmitters ^{UHF} do they have the same range as (no, no indeed) as ^VUHF?
48. Perhaps you would explain to us how you had to have two transmission chains. One in VHF and one in UHF, for years.
49. But of course this was necessary because people with 405 line sets still needed the service.
50. And when BBC 2 came in on 625 lines it had to fight to get an audience because there was a good deal of home conversion necessary. ^{wasn't there?}

51. Well lets go on to colour which came to Britain in 1967. There was this great controversy whether the system should be NTSC or PAL or SECAM or something.
52. But the BBC made its name, did it not, on convertors?
53. But the colourisation of the whole BBC television system must have been a gigantic job.
54. You became Director of Engineering in 1968 and had ten years in that post, just at the time when the Managing Director system was introduced in the BBC. Did that in fact in any way diminish the authority of the Director of Engineering?
55. Its all a matter of people working together isn't. *it*
56. *y* And you can't guarantee that they always were, or will, unfortunately.
57. How did you as the senior engineer in television for example get on with people like Hugh Weldon, with David Attenborough even with Kenneth Adam for example.
58. And as individuals, how did you get on with them? *(Can't see Program)*
59. *(A red story)* But even belt and braces didn't save the situation there did it.
60. How did you engineers conceive of yourselves within the BBC? Were you truly a corporation within the corporation or did you really feel you were an integral part of the larger body and proud to be that?
61. You always struck me as being a much more disciplined part of the BBC than the rest of us, you could even tell them *a man* that you were going to go to Bristol now to work, or you are going to go to Manchester. I could never say that to a producer.
62. How did you find yourself regarded by the DG's, I mean tell us about the two you worked with - Curran and Trethowan. *(of course you die)*
63. Were you at ease in Board ⁹⁴ management with the people from the programme side?
64. And how about your relationships with the Chairman of the board?
65. Swan? *Swan?*

*Well we have completed our six rolls Thank
you v. much. You have done us proud, I
must say, & thank you v. much for doing
it.*

22.8.90

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Note: The questions put by Frank Gillard were recorded, accidentally, at a rather low level. An audio re-recording of the questions is available in Television Film Library, if required.

Side A

F.G. It's August 22nd 1990. This is Frank Gillard in conversation with Sir James Redmond for BBC History Archive at Sir James' home in Highgate. Sir James joined the BBC in 1937 and by 1939 he was in the infant television service so he was one of the great pioneers of BBC television. Tell us about the home, the original home, of BBC television. What place was it?

J.R. Alexandra Palace had been built in the Eighties I think as an entertainment palace. By the time we got to it it had been burned down and rebuilt, and had been in very little use for many years. It was used I think in the First World War as a kind of home for Belgian refugees and people like that, so it was a disused building of very considerable space, it was high, 300 feet above sea level with the mast, the aerial was 600 feet above sea level. It was a good location for an infant broadcasting service of that kind. We looked a long time I think before selecting Alexandra Palace but it had these virtues, it was available, it was cheap, and lots of space.

F.G. Well outside London though wasn't it?

J.R. Well it was six or seven miles from Broadcasting House but it incidentally, interestingly enough it was chosen in preference to other locations in South London. We looked at Crystal Palace for instance where we now have our television transmitter but they decided in favour of Alexandra Palace. One virtue of it in those days was the great amount of space available so we could have the studios and the transmitters close together. It was very difficult to link television premises in those days, a very wide band width wasn't catered for by the Post Office, and so it was useful to be able to start with everything in one building.

F.G. What sort of transmitters were required? Were they conventional transmitters or were they very special?

J.R. They were, the video side of them was very special. The radio side, the transmitter side, the high frequency side, was a fairly typical short wave transmitter of the period but the video side, the modulation, had to be extremely wide band of course to carry the wide signals and that was special and produced by EMI.

F.G. Tell us about the characteristics.

J.R. The channel was 45 megahertz in VHF, Band 1, it took, the spectrum space required was about $3\frac{1}{2}$ megahertz, megacycles per second we called them then but they're megahertz now for some reason, and they, the output was about 17 kilowatts video, audio was 10 kilowatts or somewhat of that kind, so there were two quite different transmitters, one handling video one handling the audio. They took up a lot of space in the ground floor areas.

F.G. Did your engineers have to have special training for television?

J.R. I think you would call it 'watching Nelly' (laughs). There was no one to train us, we were all trying and experimenting and trying to find out what to do and really there wasn't anyone to train us. There were no handbooks, no drawings. Douglas Birkinshaw who was Engineer in Charge spent a lot of his time trying to produce something which we all eventually got a copy of called the Black Book, which had the circuit diagrams of the television components to the television units. It took him a lot of time - in fact I felt that someone else ought to have been doing it because he had a job and a half just running the engineering side of the station.

F.G. Tell us about the line standards and black and white and that sort of thing.

J.R. Yes well, it was 405 lines interlaced, it was a very high standard, in fact we called it a high definition service, and this standard had been achieved after years of experiment, Baird of course came along initially with a 30 line system which was soon recognised as being of no value, and gradually the whole thing worked up. The standard of course was decided upon in 1935 so I had arrived long after that particular standard issue had been resolved, but 405 was reckoned to be very adventurous high definition standard, and in fact we were able as we struggled along and experimented to get very very good pictures out of it, a very good standard indeed.

F.G. You must say it was in black and white.

J.R. Of course it was in black and white. It had been developed, the actual transmission system, the television wave form, had been evolved by a very brilliant engineer called Blumlein of the EMI Group who tragically was killed in an air crash during the war, but he evolved the system, interlaced scanning and all the other parts of a television system which are still used today.

F.G. How far did the station reach?

J.R. Well, it normally would reach a good 25 miles. There were no other stations operating of course on this band so there wasn't the kind of competition for channel space that one has nowadays, so it reached about 25 miles which in fact was about a quarter of the population of the United Kingdom. In peculiar tropospherical conditions it could reach as far as South Africa but we didn't really claim that as part of our regular service.

F.G. We ought to make it plain of course that it's not a day long service. The hours of output were limited.

J.R. Oh yes, yes, we had a morning demonstration film which had been made by the time I got there in late '38, and then there was an hour or two in the afternoon and an hour or two in the evening. Initially we didn't have Sunday transmissions but by the time I got there we were operating on Sunday as well.

F.G. Let's talk about the programme resources. Now studios. What's the studio situation?

J.R. There were two studios. When I got there they had, the reason I got there was because they were doubling the size of the service, they were moving from one studio to two, and from one O.B. unit to two, and so it was a doubling of the output, a doubling of the capacity anyway, and the original studio, Studio A, was the original EMI studio of 2,000 square feet and Studio B, the new one that was being developed, had been the Baird studio, experimental studio, and that also was 2,000 square feet. They had been ballrooms in the ancient days apparently so they were quite spacious and quite a high height.

F.G. And what about the cameras?

J.R. The camera was the Emitron developed by EMI, a very brilliant team of scientists from EMI, all ex-Cambridge engineers who had worked for years on the development of the system. The Emitron was originally developed, originally invented by

J.R. Zworykin of RCA, he called it an iconoscope, and it was the first really practical television tube. It had a charge storage principle, it operated on a charge/storage principle which meant that light was focused onto the target within the camera, within the tube, and the light was focused permanently onto the - sorry, I'm not saying this very well - the light was focused onto the target and charged it up and then the signal was scanned off by the television line once per picture, and so the storage principle meant that the camera was relatively sensitive. It was still very insensitive from modern points of view but of course was the first really practical camera tube.

F.G. Could you do fading and cutting and that sort of thing?

J.R. No, the system couldn't take cutting, it would go into oscillation, it wasn't totally stable the system that we had at that time and so there was a bit of delay in mixing. You could only do, the quickest cut you could do took $2\frac{1}{2}$ seconds, so it was really, a quick mix was about the best you could do.

F.G. And focusing, wasn't that a problem?

J.R. Well there was no focusing initially and the cameraman had a, he had a lens of course to focus the image on to the target and he had to calibrate that, he calibrated it by almost the systems that film cameramen do these days, in other words measure distances and calibrate his focusing knob so he knew when the focusing knob was about to turn it to get six feet or twelve feet, whatever.

F.G. Sounds a bit hit and miss, was it?

J.R. It worked, it was a bit hit and miss of course.

F.G. With floorspace of 2,000 square feet it must have been a very tight squeeze sometimes in the studio.

J.R. Very tight indeed, yes. If we were doing a three-act play, we would import plays from the West End of course, and if we were doing a three-act play well, the three sets had to be built in the studio and there was really very little space in the middle for camera movement, and you could have problems like cables getting intertwined and intermingled and quite often the only thing that came to our rescue was the fact that it was a three-act play and we had a little interval between each act, not perhaps as much as you would get in the theatre but that gave us time to untangle the cables.

F.G. Of course you did also have the very large studio outside the building didn't you?

J.R. The grounds you mean, yes, we used that a great deal, in fact by the time I got there they had built a duct underneath the roadway and we would use the studio cameras out in the grounds, pull cables through from the studio into the grounds. Middleton had a little garden there, a fenced-off area, and he came along and did gardening programmes. There was a little putting green and there was lessons in golf. There was a lake at the Palace and I think we did the Battle of Trafalgar there on one occasion, and things like that. We used the gardens a great deal.

F.G. Well of course you had to make use of whatever facilities you had to hand.

J.R. Well indeed.

F.G. Now, in addition to studios of course you had, you were very strong on outside broadcasts right from the beginning.

J.R. Very much so, yes, the Coronation in '37 I think was one of the earliest O.B.s that very obviously were very popular and were very many things that could be done. By the time I got there at the end of '38 they had got a television cable round the West End of London and had extended to Victoria Station and Waterloo Station, an awful lot of dignitaries used to arrive by train in those days from Southampton I suppose, and so there was that possibility so we'd do a lot of things from theatres and galleries in London, in the West End of London.

F.G. And sports events.

J.R. Sports events yes. Again by the time I got there we had a couple of radio links so the mobile units could go quite far afield and of course they acted at Wimbledon, Wembley, Brands Hatch I remember, a lot of race tracks around the London area, we did a lot of horse racing, an enormous variety of O.B.s, very successful of course because it was real live television, Out and About and the Boat Race for instance, all sorts of big events that attracted a tremendous audiences.

F.G. Then what about film?

J.R. Not much, we had a lot of problems with film. The film industry wouldn't let us have feature films, they were scared that we would take the audiences away from the cinemas, and so we had no feature films. We had a very good relationship

J.R. with the Disney group and we could get Disney films, Mickey Mouse and that sort of thing, any time. The Crown Film Unit, we got that kind of film, and my home was in Edinburgh at the time and I used to enjoy, we often, seemed quite often to see Night Mail, you know, and we all knew the soundtrack of Night Mail off by heart by the time we'd run it for about fifteen times because we had no hesitation about repeating that kind of thing, we had to often you know just to fill in spaces. Eventually of course we started a film unit but that was much more a post war effort.

F.G. Yes. Was there a sense of being some kind of élite body at Alexandra Palace?

J.R. Oh yes, yes, we were quite convinced that we were the élite of broadcasting. We probably weren't but we knew more than anyone else because nobody knew anything at all. Yes, we were very proud and we were being written up in the newspapers every day, some newspapers kept going with correspondents including Grace Wyndham Goldie writing about television very regularly, and so yes, we felt we were good.

F.G. Did the engineers and the programme makers work in harmony or did the programme makers make outrageous demands on the engineers?

J.R. Well, programme makers always make outrageous demands but we all were trying hard, we were all technicians really and I don't think anyone would say to you are you an engineer or are you a makeup expert or whatever, we were all technicians, the producers were technicians and we were all just trying to squeeze a better performance, better results, new things out of the whole system.

F.G. Did you ever have time to sit back and reflect on what television might become? The enormous influence in the land?

J.R. Well we talked about it quite a lot. We knew that/^{war}was coming, of course, everybody knew that war was coming at the end of '39 and we talked about it and we were all determined to come back, we thought this was something that had a great future. I don't think we really envisaged that every home in the land would have a television set, I'm not sure I heard anyone say that, but we knew it was something worthwhile, and of course it was becoming popular although there weren't many sets sold, by '39, by the end of '39, they were being sold, the industry was becoming very competitive and sets that cost £100 in 1936 cost half

- J.R. that price in 1939 and you could even buy a set for as little as £35.
- F.G. But you must have been greatly frustrated by lack of finance and I suppose even lack of equipment because manufacturers weren't turning out the stuff in quantities were they?
- J.R. No indeed they were not, no no. Actually as a junior engineer I wasn't too bothered about lack of finance, I don't think as engineers we were too much bothered because we'd just got a lot of money poured into us in the form of a new studio and a new outside broadcast unit so we had double the facilities. We were hard pressed to make these things work and to get good and reliable output from them. The hard pressed chaps financially of course were the programme makers. The programme allowance I think I'm right in saying in '38 when I joined was £3,000 a week and it had started at £1,000 a week in 1936, so the programme makers were very very hard pressed indeed to make ends meet.
- F.G. Was there a feeling of resentment at all, any sense of neglect even, by the BBC centrally, with Broadcasting House ignoring television, or just putting up with it, or was it encouraging?
- J.R. It was nervous about it, and it was particularly nervous in that it was obviously going to cost an awful lot of money, and the licence fee I think was only ten shillings a week pre-war, there was only one licence, the radio licence, and they had managed very well on that right since the beginning of broadcasting, in fact I think the Government grabbed an awful lot of it in taxation over the years, and it was quite clear that television was going to cost an awful lot more so they were nervous about that. On the other hand they were rather proud of it and they had after all supported the concept of a television service and argued for it. They had to fight a long time to make sure that it was the Marconi EMI system and not the Baird system, but having got it I think they were proud but nervous.
- F.G. How many television sets do you suppose there were in use at the time when war broke out?
- J.R. Well they say it, the number that's regularly quoted is 23,000 and I think that's probably true.
- F.G. What did these sets look like? Were they enormous things?

- J.R. They started as enormous things and in fact were rather more like pieces of furniture than a television receiver, and these were the sets that would cost about £100, and remember £100 could buy you a small car in 1936, so they were very expensive and they couldn't sell them really and overnight I think, '37 or '38, EMI just halved the price of its sets, and also by that time they had been able to re-engineer the sets so that there wasn't so much timber in them and more electronics.
- F.G. But what was the size of the screen and was it bright or dim? Did you have to draw the curtains?
- J.R. It wasn't very bright, no. Typically 9 inch. I think it - no, I was going to say I think there were 12 inch ones available but I'm not sure there were, I think they had some 12 inch ones in the control rooms. Whether they were available elsewhere I'm not too sure. 7 inch was a possibility, but I think they were trying so hard to standardise on 9 inch, and they were dim of course, the picture was really quite poor and you really had to switch off the lights to see what was going on.
- F.G. It's hard to imagine a family gathered round a dim little 7 inch picture.
- J.R. We did it, my goodness yes, and enjoyed it.
- F.G. Public interest was great?
- J.R. Tremendous, yes, absolutely tremendous.
- F.G. Well, during the war the television service was off the air. Then war ends and back we come again and all you have to do is take off the dust covers and start up?
- J.R. Not exactly, no, no, I think it took us about six months to get going. The equipment had been run once or twice during the war for some Select Committee demonstration but with a great deal of difficulty and perhaps just one camera working. My first job was to replace all the electrolytics that I could find. The electrolytic condensers in those days had a life of about six months and so they all had to be replaced and every bit of equipment had to be gone through, gone over and tested and checked again, and EMI had to start reminding themselves how to make camera tubes again because they had stopped making Emitrons during the war and they were - so it took six months to get going and we started the

- J.R. day before the Victory Parade, the opening ceremony was that day, really just to get it over with, and we started really with the Victory Parade and of course that produced a tremendous reaction. I doubt if there were many sets around but I've still got a mug that someone gave me as a gift because they were able to come into my home and watch the Victory Parade on it.
- F.G. Tell us about the limitations on the development of television. Everybody wanted television all over the country but you couldn't spread it could you?
- J.R. No it was very difficult. The Government was keen to have television spread, they were nervous about the unemployment that occurred after the First World War and so they were keen on new industries like television being spread, and so we got a lot of Government support. The BBC was very keen also to get going, partly because there was talk even then of privatising the television service because it was going to be so expensive, and would the public pay the licence fee and all the questions that we still hear, and so the BBC of course was determined to get cracking before any bright ideas like that could come too high up on the agenda. So we got going quickly with a lot of Government support. Of course the first priority I think really was to spread television throughout the country but that was not easy. The Post Office had to be involved and they had their problems too in getting going after the war but a high priority was given to the big five transmitters in Sutton Coldfield, Manchester, Scotland and Cardiff, and so we got cracking with them. The first one came in in '49 but by '52, 1952, we had these big five in and running and we were reaching 97% of the population of the country. So that was very good from the point of view of the - the industry were very keen on that because they could sell sets up and down the country.
- F.G. Because alongside this, the television service was extending its hours and it needed more studios and so we come to the acquisition of Lime Grove. Tell us about that?
- J.R. Well yes, that was the first one that we bought and that was an old film studio setup in the Shepherds Bush area with five studios, and we equipped four of them at least I remember, and they were a very good stopgap but they were only ever a stopgap. It was a most inconvenient building. As you went through the front hall

- J.R. you came into the boiler room, there were no offices, there was nothing really for a television service as distinct from a film service, I mean a film company wanting to make a film would go into Lime Grove with one camera and its scenery and its actors, make their film and go away again. We needed all the planning facilities, makeup, wardrobe, scenery, all sorts of facilities, and Lime Grove just wasn't right at all, so we began looking around for a permanent home, quite early on we started looking for a permanent home, but in the run-up to a permanent home we acquired the Shepherds Bush Empire because we wanted something for audience shows, and we also acquired Riverside, the two film studios at Riverside at Hammersmith, and used them very much as a test-bed for what eventually became our permanent home at Television Centre. A great deal of work was done at Riverside in experimenting on all the kind of cameras to use, the kind of lighting rigs, as well as all sorts of artistic experiments to just sort out how to operate in our permanent home. Eventually we got our first studio, Studio 3, operational at Television Centre in 1960.
- F.G. But before then there was this rather highly centralised television service based in London. Very little coming from outside London, isn't this true? Tell us about the regional development.
- J.R. Well there was nothing that could come from the Regions for a long time because of the link problem, and our policy there was to put O.B. vans, MCRs, into the Regions, and that was really quite successful. That was done in the '50s, each big Region had a mobile unit, a MCR unit, used very much for sport and whatever was going on on Saturdays, but of course the MCRs were then underemployed for the rest of the week and someone hit on the bright idea of buying an old cinema or a church hall or whatever in each of these places, put some lighting gantries into them, drive the MCR into the yard midweek, and make programmes in these places, and that worked very well for a while. They were not very suitable, the cinema that we had in Pebble Mill, near Pebble Mill, had a sloping floor, you know how cinemas tend to do that. It wasn't very suitable for a television studio, but we managed, and they gave us some presence, BBC presence in all these places.
- F.G. You did achieve though, some very remarkable outside broadcasts. Crossing the Channel for example.

J.R. Yes, I was involved in the very first link, attempting to get a link from Calais, and this was 1950 or '51. It was in fact the beginning of Eurovision, and we went to Calais. I got the job of finding the link back, sorting out the link back, from the roof of the town hall at Calais back to Swingate, some radar masts near Dover. That was easy. Then in the North end I could get from our own FM transmitter mast at Wrotham back into the roof of our university - Senate House - in London, and I had to fill the gap in between, so I spent a very pleasant week on the South Downs looking for sites and eventually we got the signal back, I think there were about four hops from Calais back to London. And that was the start of Eurovision.

F.G. Of course another notable outside broadcast was the Coronation. Were you involved in that at all?

J.R. Yes, providing the facilities, yes again. I was - that was a very big event indeed and I think we ran something like 22 cameras which was an enormous number of cameras at that time in the Coronation, and it was a very well received programme, very well received indeed, yes.

F.G. And then of course in the mid '50s you suddenly found you had brothers in arms, as it were, up against you.

J.R. Well yes, yes, that was a very nervous-making period altogether, suddenly the announcement of commercial television, and we didn't seem to know how to compete and the audiences fell and fell and fell and we were down to ^Ithink 30% or so of the audience until Hugh Greene, the Director-General, said go out and compete, and we very quickly did so, very much helped by the Light Entertainment Department run by chaps like Tom Sloan with a junior assistant called Bill Cotton, people like that, and we began to compete. It was a tricky period for us. It was also quite good financially of course because the only place the commercial companies could get people from was from the BBC and people were drifting out at a tremendous rate - complete television crews would resign on Friday night and turn up in Manchester or somewhere like that on Monday morning ready for work. One nice aspect of it of course was that our salaries went up, they had to pay more to keep us, and salaries went up by about 30%, so it wasn't all bad, and in the end I think the competition was good for us.

F.G. And did you maintain decent relations with ITV engineers?

J.R. Yes, after all we weren't really competing on technical issues.

Side B

F.G. Where there problems, or relations, with the ITV over the sharing of premises, masts and sites?

J.R. No, that problem came a bit later. When they started, they started with quite separate locations. They were on a different band from us. Although we were both VHF we were Band 1 VHF and they were in Band 3 VHF which was a higher frequency range, and so therefore they didn't have quite as good coverage as we had so they had to search around, or felt they had to search around, and build their transmitters in different locations so this is, we're still talking about 405 line black and white television, and in these circumstances we had two quite separate networks and I don't think we ever came together, or at least not within a couple of miles of each other.

F.G. I see. Up to this point or roughly up to this point television was a live medium wasn't it? Almost all production work had to be live but of course everybody was champing at the bit to have decent recording facilities of one kind or another -

J.R. Yes indeed, yes.

F.G. Could you talk a bit about that?

J.R. Yes well, of course we were desperately anxious to be able to record the programmes and the first thinking, the first objective was to be able to record a thing like the Coronation in the afternoon and repeat it in the evening. We didn't really think of recording as a total production tool as it is now, and editing as a total production tool. We worked very hard, in fact a lot of my career at that time was in film telerecording, trying to make film telerecording work, and we did achieve some success, but the breakthrough came when we got to magnetic recording. We had been working on that in the BBC in Research Department. A very bright engineer called Peter Axon from Kingswood Warren was working on tape recording, he'd set up his system really just to try to establish what the problems were, what the parameters were, and his first attempt was to record, to get the full band width of the television picture on to tape, half inch tape, was to run it at 200 inches per second as distinct from 15 inches per second used by the

J.R. audio engineers, and that device he called VERA, and the programme people got to hear about it and insisted on putting it into Panorama one evening, and plenty of engineers were quite keen of course to show it off and get the publicity but it wasn't very successful, and fortunately for us the Ampex Corporation in California produced the working videotape recorder that we all now know. At that time they had developed a machine which used 2 inch wide tape, run it at 15 inches per second, scan across the tape, transversely across the tape rather than longitudinally, and they also frequency modulated the signal, so they managed to squeeze the television waveform into 2 inch wide tape running at 15 inches per second. I was sent to see these machines in operation, I went to NBC one Friday and saw the film machines in operation but I was rather bothered because half of Ampex's top brass was there to assure me about everything and to point out all the wonderful features of the thing, so when they went home at night I went back into the area and said to the recording engineers "Can I spend some time with you having a look and seeing just how you get on?" and they say "Sure, come and spend the weekend", so I spent the weekend with them and was very impressed, then using them just for time delay work at that time, and when I got back I reported to Engineering Direction Meeting what I had seen and recommended that we abandoned VERA and I abandoned all work on VERA and buy these wonderful machines, and there was a very long silence, everyone looking at the Head of Research Department, H.L. Kirk, and Kirk looked glum but didn't say anything for a while and then eventually just said "I agree with Redmond", and I breathed an enormous sigh of relief and thought I'm going to survive another year or two and it's worth it, and that was it. After that we abandoned all our work on videotape recording and abandoned most of our work on film recording but we still used quite a lot of it for archives and for sale overseas, but really the effort went into videotape recording and our effort there was partly to get money to buy machines all the time, we wanted more and more of them, and partly to learn how to edit this new medium which was a big requirement then.

F.G. Nothing less than a revolution though was it?

J.R. Oh it was a tremendous revolution yes, it really was a magnificent bit of development work.

F.G. The next revolution, in BBC television anyway, was the coming of the Television Centre. This had been planned for a long time ahead I guess?

J.R. Yes. I forget when it all began but very soon after the war I think. It soon became obvious after the war that we needed a permanent home, that we couldn't really manage in old film studios or old church halls or whatever, we had to start from a piece of flat earth and that was Television Centre at White City, and as I said earlier we opened the first studio there in 1960 and then kept adding on, and it worked out as a very very good centre indeed. I think we had four big studios of 8,000 square feet and four about half that size for a while, and one enormous one at 11,000 square feet, and a couple of presentation studios, loads of telecine machines, videotape machines and all the rest of it kept on being added in of course.

F.G. Would you say that you overestimated the need for studios?

J.R. I think we were able to make good use of all our studios. With hindsight I think we shouldn't have put them all in West London. I think we would have been better off - this is just a personal view - with about half that number, you know, four or five studios in West London and another four or five say in Manchester or somewhere like that. The, it became quite difficult to manage, it was so big and so difficult to manage. It really worked only because each studio was being operated by a crew, and that crew was doing its own thing and ignoring the fact that there were twelve other crews operating in Television Centre, so it really was a lot of little activities within this big area, but it became very difficult to manage. We needed five or so studios to pull together all skills and expertise of all the different kinds you need to build up a good, successful television system, but I sometimes think that it would have been nice with, or better, if we'd had two of them.

F.G. Then, of course, Television Centre didn't come along much too soon because the BBC was faced with vast expansion in the '60s.

J.R. Yes, we had a lot to do there. If I could just go back slightly, I managed to come into the Television Service after the 405 line issue had been settled, but immediately after the war there was agitation to go higher in standards, and the first impetus came from RCA and from Philips, the two big set makers, who argued

J.R. that Europe should be operating on 625 lines, 50 fields, because the Americans had decided on 525 60 fields and the operational rates of these two systems were almost identical so you could design a receiver that could be sold anywhere in the world, and this was the great pressure. We of course opposed it and said 405 lines was magnificent, come and look at the beautiful pictures that we can produce, the French of course ahead of everyone always said we think 819 lines would be good, and there was this kind of argument, but really within a couple of years everyone had decided that 625 lines was a very good system. All these new countries, I mean countries new to television, decided to adopt 625 lines including Russia and Eastern Europe, so we went to 625. Then when we were - oh, sorry, we agreed that we would use 625 and the French agreed that they would use 625 when they went on to UHF and colour, and we weren't going to start that for a while, so that's where we left it.

F.G. So when in 1963 or whenever it was the Government authorised the BBC to bring in its second television system, the line standard issue was already decided.

J.R. That had been decided, that we were going to start in UHF and it had been already agreed a long way back that that would be 625 lines.

F.G. Problems though. I mean 625 line transmitters UHF do they have the same range as -

J.R. No, no indeed, no, no indeed -

F.G. As VHF?

J.R. The UHF, and in fact it was calculated at that time that we might need a thousand transmitters, and in fact I think they're up to a thousand transmitters now, a lot of them very low power ones, but it certainly needed a lot more transmitters and of course a greater band width, so we needed new circuits, new radio links, these sort of things, and of course this was BBC-2 that we were starting in 625 lines but we knew that we were soon going to take BBC-1 on to 625 lines as well, so we had the problem of standards conversion, and quite early on we made the policy decision to make everything in 625 and convert it down to 405 when it was needed for the old VHF service. And that was a big development, we had to do an enormous amount of work in re-equipping studios and MCRs, telecines, VCRs, everything for the new standard, but we did that quite quickly and it really paid off.

- F.G. Perhaps you would explain to us how you had to have two transmission chains. One in VHF and one in UHF, for years.
- J.R. That's right, yes, they ran in parallel for I think it was 17 years, as much as 17 years, so all that time we were broadcasting programmes on the two standards, 625 and 405, for BBC-1, a great expense and a great use of frequencies that we could have used for other things, for transmission. It was quite a headache.
- F.G. But of course this was necessary because people with 405 line sets still needed the service.
- J.R. Yes, we thought that ten years would have been enough, that by that time everyone would have re-equipped but it wasn't the case, people seemed to keep their sets going for many, many years, fifteen years was quite common, and so we had to keep the service running for much longer than we had imagined.
- F.G. And when BBC-2 came in on 625 lines it had to fight to get an audience because there was a good deal of home conversion necessary, wasn't there?
- J.R. Yes indeed, yes, yes, the viewer needed of course the - if he hadn't already bought himself a black and white 625 line set. BBC-2 started in black and white but very quickly went on to colour, and this of course was a problem for the industry because the industry, realising - the public, realising that colour would be coming fairly soon, postponed the purchase of black and white sets, so the industry started agitating the BBC and saying for goodness sake why don't you start in colour, we can't sell our black and white sets. We'd been broadcasting colour every night, you know, after midnight, for ten years at least, learning the game, and so we had to rush into it. But the public had to, during this period of uncertainty, had to try to make up their minds what to do and various odd devices came along like dual standard sets so people want to decide whether they were going to watch on 405 VHF or 625 lines UHF and perhaps have aerials pointing in different directions and so on like that, so there was a great sigh of relief when eventually we got everything moved over to 625.
- F.G. Well let's go on to colour which came to Britain in 1967. There was this great controversy whether the system should be NTSC or PAL or SECAM or something.
- J.R. That's right, yes. The Americans had done some excellent work in the mid '50s I think and produced a system called NTSC, National Television Systems Committee

J.R. of America, and that was a very good colour standard and we in the BBC thought that's fine, they've invented it, why should we re-invent the wheel, so we were all in favour of going NTSC. But most of Europe wasn't really ready then to go to colour and so there was time for second thoughts and discussions and that's always dangerous as you know, and the other thing that went wrong was that the Americans didn't seem to be putting that much life into colour, they weren't doing much colour. I mean there were weeks on NBC, they were pushing it, they were the foremost company being run by RCA who were making the colour sets, they were putting out some colour but it might only have been two or three programmes in a week, and the other thing was that people like us going to the States would see appalling colour on the sets in hotel bedrooms, and we found that the system didn't cope very well with long distance transmissions and of course an awful lot of the American programmes had come from a long way across the American continent, and so this encouraged all sorts of people in Europe to think on new ideas and so we had great discussions and great negotiations and arguments going on. The French of course were determined that it would not be an American system and it had to be something else in Europe and they invented a new system almost every year, given different names like Henri de France, and eventually it was called SECAM and there was SECAM 1 and SECAM 2, SECAM 3, SECAM 4. The Germans invented PAL which was NTSC with a very clever correction for this problem that the Americans had on long lines. But we were still keen on NTSC and we went to Russia to try to persuade the Russians, and the engineers in Russia were very sympathetic. Eventually we saw the Minister of Post and Telecoms, or the Minister of Science and Technology, a man called _____, son-in-law of Kosygin, and he was very polite, very nice, but he had an enormous French Thomson-Tewson colour set in the corner of his office so we were despondent right away, and eventually he said "Well, I know the BBC can make anything work but we need a system that is very simple for our untrained people and will be very reliable with the very long distances that we have to cover, so we're going for SECAM". We learned afterwards that they had been promised that the French would develop a display tube for the television receiver that wouldn't infringe the RCA shadowmask tube patent, but in fact they never got it. Anyway, that meant that in Europe one half of Europe

J.R. was on SECAM and the other half on PAL. It was very sad because this meant that we had to cope with two line standards, 625 and 525, and three colour systems so we needed standards convertors and translators and it was a very costly activity - in fact, still is.

F.G. But the BBC made its name, did it not, on convertors?

J.R. Well convertors were really - electronic convertors - were a BBC development although they led in the whole thing and did it extremely well. The Director of Engineering at the time, Francis McLean, encouraged both Design Department and Research Department to think on ideas for standards convertors and they both put up proposals, and McLean knowing the importance and seriousness of the situation gave them both the go-ahead and they both produced really good working machines and we took it on from there, and in fact the BBC led the way in standards conversion - it was absolutely essential for us to have convertors.

F.G. But the colourisation of the whole BBC television system must have been a gigantic job.

J.R. Oh yes, yes. David Attenborough and I were appointed as a kind of two-man committee plus a financier and an admin man just to keep an eye on us I suppose, to make proposals, and of course we did all the proper things like going to Japan and the States and looking at what they were doing and finding out what they were doing, and we came back with the very very positive recommendation that we had to get into colour just as quickly as we could, no messing, just colour everything just as quickly as we could. And that was the agreed policy, we started with malice aforethought on Wimbledon fortnight and we had there thirty-odd hours of colour in the very first week. It was all one programme but it was a very good programme of course, and that's how we began.

F.G. You became Director of Engineering in 1968 and had ten years in that post, just at the time when the Managing Director system was introduced in the BBC. Did that in fact in any way diminish the authority of the Director of Engineering?

J.R. No, I thought it would at the beginning and I was very cross about the whole thing, particularly, just to explain that it meant that the engineers in the output divisions, Radio, Television, External, ceased to be on my establishment and were on the establishment of the Managing Directors, and I thought that that would

J.R. reduce my control of these engineers. I thought it was a fuss about nothing because all my BBC career I had worked for two bosses. It was a programme man who told me what to do and my Director of Engineering had told me how to do it, and also my Director of Engineering backed me up with enormous research and these kind of facilities. So I was a bit cross about it, but in fact all the members of the Board of Management got on very well together and it worked out very well because we talked to each other about the appointments of Chief Engineers Regions, Television, Radio as we always had done anyway, so nothing much changed really, it all worked I think quite well in the long run.

F.G. It's all a matter of people working together isn't it, and you can't guarantee that they always were, or will, unfortunately.

J.R. No indeed, no, no.

F.G. How did you as the senior engineer in television for example get on with people like Huw Wheldon, with David Attenborough, even with Kenneth Adam for example?

J.R. Very well, in fact again I don't ever remember anyone saying gosh, you ought to be on our establishment rather than on the Director of Engineering's establishment because there we were, we were all struggling, it was a very tricky period of enormous development in technology, and we needed the engineers, we needed the specialists, we needed the chaps from Research Department and Designs Department and that sort of thing, and so really I was a very valuable member of the Television Service management team because I was backed up by all these people as well, so there was no conflict at all there.

F.G. And as individuals, how did you get on with them?

J.R. Well, Kenneth Adam was I think losing his touch is the kindest thing to say as we went along. Huw Wheldon was great, I can't remember what his job was -

F.G. Controller, Programmes.

J.R. Controller, Programmes, yes, that's right, yes. David Attenborough, always got on well with him, we had a good long working relationship long after I was D.E. as well. Fox, very good indeed, he was in charge of Sport a lot of the time, and you were talking about belt and braces in the Engineering Division, or you threatened to talk about belt and braces in the Engineering Division, I would give you one example if it's not too much out of context. I got Designs

J.R. Department, or Designs Department produced a very good 16 mm. film recorder, this is before the videotape machines work, and I got it in to Television Centre and we ran it and tried it for a while, so I got various senior/^{programme}people in and said "Is this the kind of thing you want - should we get another one made and have a pair?" and Paul Fox said "Yes, I want two, but" he said "I want this one on Saturday, and every Saturday", and I said "There's only one". He said "I don't mind, I'll take a chance", so I said "Well, O.K., if you guarantee that when we do drop a clanger you'll cover it up, you can use it". He said "O.K.", so he used it to record a football match on Saturday afternoon and the drill was that they'd have a one-hour magazine, this camera, and he recorded the first half. Somebody rushed off to the labs/^{with the first half}to get it processed, and then the second half. One Monday morning I came in and there was a letter on my desk from Paul. It was written - it was in red ink, I'm sure - but he said "I'm writing in blood to tell you what I think of all engineers, and your people in recording particularly". They had, when it came to half-time and had to change the magazine, they capped up the lens. Well, why on earth they should bother to cap up the lens I don't know, but they capped up the lens and of course recorded the second half with the lens capped up. It was very difficult. (LAUGHS).

F.G. A sad story. But even belt and braces didn't save the situation there did it?

J.R. No it didn't, no, no.

F.G. How did you engineers conceive of yourselves within the BBC? Were you truly a corporation within the Corporation or did you really feel you were an integral part of the larger body and proud to be that?

J.R. I certainly felt I was an integral part. As I said, I always had two bosses, a programme chief and an engineering chief, and this was, never any conflict, and I was very much an operational engineer, we were trying to get things better, we were trying to make better programmes, so I was not bothered at all, in fact it didn't fuss me at all about being in two establishments. Some engineers I'm sure had a different view. We were arrogant, we knew we were good, and we were better than any other engineering group in any other broadcasting company, so we were conceited I suppose and that probably irritated people.

- F.G. You always struck me as being a much more disciplined part of the BBC than the rest of us. You could even tell a man you are going to go to Bristol now to work, or you are going to Manchester. I could never say that to a producer.
- J.R. Oh well, we were disciplined, yes, and it wasn't - I don't think it was a harmful discipline, not for us anyway as engineers. There was really quite tough leadership and we were led by people whom we I think always respected. The Directors of Engineering before me were very good engineers, Ashbridge, Bishop, McLean, knew their stuff, very much so, and that always brings respect I think, as it does in the programme services.
- F.G. How did you find yourself regarded by the D.G.s, I mean tell us about the two you worked with - Curran and Trethowan.
- J.R. Well, I worked a little bit with Hugh Greene as well -
- F.G. Of course you did.
- J.R. A year and a half or so with Hugh Greene, and Hugh I got on very well with indeed, and admired him and everything worked very well with him. He was a kind of man who would say "You go away and sort it all out", or if it was a meeting that he had to attend, you know, with Government ministers or whatever, he would say "You do the talking and I'll pitch in if necessary". It worked very well indeed and I had a lot of respect for him - also as a programme director too of course. Charles Curran thought he was a very good engineer and so therefore he irritated me because he would tell me what I ought to be doing about this or that, and really quite technical things, and I thought this was an irritation. I disliked his manner on Board of Management for the same sort of reason. He would tell us in Board of Management what he had decided and then ask for our opinions. Well, it's very difficult indeed when the boss handles it that way, so I felt he was rather a poor D.G. Ian Trethowan was very good, he always said "What do you think?". He had his mind made up, he knew what he wanted really, but he would always let you talk first. I got on well with Ian. Of course I'd known him for many years in different activities.
- F.G. Were you at ease in Board of Management with the people from the programme side?
- J.R. Oh very much so, I thought it was a very good meeting, particularly the informal part of it. The lunch was excellent because we could relax and gossip and chat

- J.R. to each other, and we could raise little issues there that we couldn't really raise formally in big meetings. I think it made for very good relationships.
- F.G. And how about your relationships with the Chairmen of the Board?
- J.R. Well I had only two Chairmen really to deal with, Charles Hill and Michael Swann. Charles Hill I had distrusted a bit, mainly I suppose after the manner of his coming in from commercial television, and after that from the fact that he took over more of what we thought was the D.G. role and behaved much more as a managing director rather than as a chairman as it were, and that wasn't very good. He also had a habit of changing his mind. We would discuss something before going to a meeting with ministers and we would agree on a plan of campaign and agree what our line was, and he would turn it upside down during the meeting, and when you argued with him he would say "Well, I could see it was going that way so I thought we would, we'd better get in first and say we would do it that way rather than be told to do it that way," which I didn't like very much.
- F.G. Swann?
- J.R. Swann? Excellent. A scientist of course so I admired him, and a very competent man. Wrote his own speeches.
- F.G. Well, we've completed our six rolls. Thank you very much. You've done us proud, I must say, and thanks awfully for doing it.
- J.R. Thank you very much, thank you.