CONFIDENTIAL.

MEETING OF ENGINEERS-IN-CHARGE 1967.

M I N U T E S

TALK BY DIRECTOR-GENERAL

D.G. said that looking at the minutes of last year's meeting, it was a pleasant change to be able to report that many of the subjects about which he had spoken on that occasion had advanced considerably in the past year and that in general things had worked out as one hoped they would a year ago.

COLOUR.

The most notable advance had been the Launching of Colour and quite clearly, from an engineering point of view, this had been a very great success indeed. How great was the success from the public point of view was difficult to measure at the moment, partly because the Radio Industry had underestimated demand. It was always difficult to forecast public demand and in this country public demand had been somewhat greater than the availability of sets. In Germany the situation had been the reverse.

From a programme, as well as an engineering point of view, the start had been a success. The field store converter had been a great engineering achievement and we confidently expected that it would make it possible to transmit the Olympic Games "live" in colour from Mexico next year. It had already enabled us to have a remarkable transmission of Golf Championships from the United States.

There was an enormous improvement in our standard of colour transmission as compared with that seen in the United States a year ago, but D.E. would say more about this, as he had only just returned from a visit to the U.S.A. and Canada.

During the past year a decision had been made on the method of change-over from 405 to 625 lines and the duplicated service was expected to begin in late 1969 or early 1970.

FINANCE.

He had mentioned last year the understanding with the Government that the BBC would economise to the best of its ability with the intention of getting through to 1968 without an increase in the licence fee and without making any extensive use of our borrowing powers, provided the Government, on their side, would introduce legislation against licence evasion. This understanding had been kept on both sides. The economy measures had been successful and he was particularly grateful for all that the Engineering Division had done in increased productivity. Legislation against licence evasion was already showing good results, but that was what we had counted on and it was wrong for certain sections of the Press to think that because of these good results we would not now need an increase in the basic licence fee in 1968. All our estimates had been based on getting good results. It was very much hoped for an increase in the licence to £6 with effect from 1st April 1968, which meant that a decision would need to be taken by the end of November to allow for administrative procedures,

suitable announcement, printing of new licences, etc.

The introduction of a £5 supplementary licence fee for colour from the beginning of 1968 was another very important development for the whole future of the BBC and if colour spread at the hoped-for rate it could, by the middle of 1970, be bringing in considerable sums of money which would help to stabilise our position and avoid our having to seek any further increase before 1972. If colour spread at a quicker rate it might even be possible to go beyond 1972 without seeking a further increase.

As a result of all this, the question of the BBC accepting advertising was unlikely to be raised again - at least until the BBC's Charter next came up for revision in 1976, before which there would no doubt have been another Committee/enquiry into the whole future of broadcasting in this country.

LOCAL BROADCASTING.

This was another field in which there had been considerable progress since the last meeting. The Government approved a 9-station experiment in local broadcasting and we were in fact going ahead with 8 stations - Manchester having opted out of the experiment for political reasons. Leicester would open on November 8th, Sheffield on November 15th, Merseyside on November 22nd. Two months later stations would open at Nottingham, Brighton and Stoke, and Leeds and Durham would follow in the Spring. The intention of the Government was to assess in the Spring of 1969 onwards the success or otherwise of this experiment, by which time some of the stations would have had 18 months on the air. There was no doubt that the present Government was extremely keen that the experiment should be a success. There had been a good deal of criticism of the method of financing these stations. Neither the Government nor ourselves wanted advertising on local radio stations and this had led to the suggestion that we should try raising finance from local resources. Money would in fact be coming out of the rates, but it had been laid down in the White Paper that no local authority could specifically show Local Broadcasting as a heading in its rates. Attempts were also being made to raise money from local bodies and industry; the most forthcoming of these at present was Merseyside.

Each station would have a local Council with a general advisory function and under the terms of the White Paper the Chairmen and membership of these Councils were to be appointed by the Postmaster General in consultation with the BBC. Two meetings had recently been held with the Postmaster General at which the Chairmen and members of the local councils of the first six stations had been chosen and would be announced shortly, in order that the Councils would have an opportunity of meeting before the first stations come on the air.

PIRATE BROADCASTING.

What one hoped a year ago would happen, had happened. Legislation against the Pirates had become effective and only two were left in action. Once the Dutch Government introduced legislation against pirates, it was hoped that the office of "Caroline" in Amsterdam would have to close down, that the gap which still existed in Western Europe would then be closed. The continued existence of the two Carolines would then become a matter of a considerably short space of time.

Meanwhile the BBC had begun its supposed replacement service for the Pirates, namely Radio 1. This was a much more elaborate operation than had been anticipated a year ago when we were not thinking of so many hours on the air for Radio 1, and its difference from Radio 2. As they knew we were running into some difficulties with the public and E.I.D. was having one of the busiest times in its history dealing with difficulties experienced by listeners which were mainly difficulties with people who wanted Radio 2 and had been used to getting this on 247 m. A good many of these complaints came from people who simply had not got used to switching the knob on their sets to "LONG WAVE". For others who could not receive the long waves the only alternative was to continue to encourage them to get VHF sets.

As far as young people were concerned, Radio 1 seemed to have made a pretty good start and, so far as was possible with limited needle time, was thought to be quite a good replacement for the Pirates. D.G. had been told by some young people that it was "better than 'Caroline', but not as good as 'Radio London'"!

FOURTH TELEVISION CHANNEL.

Last year's predictions that there would be no fourth television channel and that the Open University, if it came, would come on BBC-2 had proved correct. It had recently been announced that the Open University would start on BBC-2 in the autumn of 1970 with morning, afternoon and evening (probably 6.0 to 7.0 or 7.30) transmissions. From the beginning of January 1968 the Further Education band on BBC-2 would be moved back from 7.30 to 7.0 p.m. and the News in Colour would be radiated at 7.30 p.m. We had promised the Further Education Advisory Committee to take a further look in Autumn 1969 at this timing of programmes in the light of the opening of colour on BBC-1 and Government decisions about the Open University. What would be the future long term decision about this crucial time of 7.30 p.m. on BBC-2 was not yet known. A half-hour's News in colour might well have popularly established itself by 1969 and there might be difficulty when the Open University began in housing, at reasonable times, our own Further Education programmes. There was certainly no intention of dropping our own Further Education programmes when the Open University arrived. This was a problem for the future. A helpful factor was that the Chairman of the Organising Committee set up for the Open University (Mr. Peter Venables) was also the Chairman of our own Further Education Advisory Committee.

EDUCATIONAL BROADCASTING IN THE UNITED STATES.

The possible use of satellites in the United States for public television under the auspices of the Ford Foundation did not appear to have progressed at all. There was, however, an interesting development in the U.S.A. for a two-hour Current Affairs programme every Sunday on the Educational Network under the auspices of Professor Fred Friendly, once of CBS and now with the Ford Foundation and, as Executive Producer, a man called Ab Westin who also came from CBS and was one of the best men in the Current Affairs field in the United States. This should be a really professional job. It was intended that there should be a Radio component as well and these may give the BBC a new outlet for our programmes in the U.S.A.

A Bill had also passed through Congress, following a report by the Carnegie Commission on Public Television which was likely to lead to a

development of public television on individual stations rather than on a network basis which was the difference between the Ford Foundation project and the Carnegie project. It was an interesting development that the United States seemed now, as never before, to be aware of the shortcomings of their own commercial system and to wish to introduce a system rather more similar to the BBC.

USE OF SATELLITES INTERNATIONALLY.

This continued to be a matter for discussion between the European Broadcasting Union, the European Post Offices and COMSAT.

There had been some reduction in tariffs and there had been some withdrawal of unrealistic demands by the Post Offices, but the tariffs ought to come still lower and this looked like continuing to be a long-drawn-out process.

PRESS AND PUBLIC RELATIONS.

There had been a continued improvement. Relations with the Government and the Labour Party were at the moment quite remarkably cordial and this had been particularly so at the recent Labour Party Conference at Scarborough.

Relations with the Press continued, on the whole, to be fairly good. The whole question of broadcasting standards which used to be so much to the fore had now sunk into the background with a consequent decrease in publicity for such figures as Mrs. Whitehouse.

PAY TELEVISION.

Everything had been very quiet during the past year. There had been a rumour that the one company operating in London and Sheffield had pressed for an assessment to be made earlier than 1969 because they were losing money and wished to develop before they lost too much, but it was not thought that such an assessment had been made. It would, of course, become still more expensive for Pay Tv to compete in colour. Whilst one had to speak against a background of considerable ignorance, it could perhaps be that the threat of Pay Tv was receding. Also during the past year there had not been so much trouble with closed-circuit television in cinemas.

UNION RELATIONS.

Our policy in regard to the Closed Shop issue remained exactly as stated a year ago. There had recently been a period of difficult industrial relations with the ABS, but D.G. felt it would be wrong for him to refer to this in detail as the industrial action had been brought to an end at midnight the previous night and the grading claims which were the reason for that industrial action were about to be considered by a group of three Assessors. He prophesied that industrial relations were going to be an important and difficult element in the next year.

NEW ITV GROUPINGS.

One had heard that the new Companies were having a fairly difficult time in many ways; the Rediffusion/ABC merger seemed to have run into difficulties; there were difficulties over the studios in connection with the new Harlech Consortium, and there were problems of personal relationships in both the new London Consortium and in Yorkshire Television.

One result of these new groupings, so far as the BBC was concerned, was the development of Leeds as an area station and the introduction of a Leeds Television News Bulletin each evening.

We might find competition tougher, especially in Wales if the Harlech Consortium lived up to its promises, but time would tell.

DEVELOPMENT OF VISNEWS.

Visnews, the Television News Agency, formerly known as BCINA (British Commonwealth International Newsfilm Agency) was founded in 1957/58 by the BBC and Rank with the Australian Broadcasting Commission and the Canadian Broadcasting Corporation as co-owners. It lost money steadily until 1962/63 and the turning point was when we managed to get Reuters into the Consortium with their very remarkable General Manager at that time - Tony Coles. He took over as General Manager of BCINA and before his sad early death, changed the Company in a remarkably short time from "the red" into "the black" and it has remained in "the black" ever since. In the financial year 1966/67 its income for the first time was over a million pounds and its success had been such that it had reduced United Press International into a secondary position in the world. UPI had now gone in with the ITN, but so far that had not altered their position. He believed Visnews now had a contract with every television organisation in Europe and also did well beyond Europe. Another element in its success which improved American coverage very much was an arrangement with N.B.C..

New problems would come with the introduction of colour. The BBC intended to broadcast News in colour as from January, and Visnews would be operating in colour initially mainly for the BBC, but quite clearly as other broadcasting organisations started colour services they, too, would be requiring news in colour. The BBC's normal annual subscription to Visnews was £160,000 p.a. and we would be paying about an additional £30,000 p.a. for colour.

TELEVISION ENTERPRISES.

D.G. himself had started this in External Services in 1952/53 when he was A.C.O.S., on a self-supporting basis, having failed to get a subsidy from the Government as part of Grant-in-Aid. For the past seven or eight years it had been part of the Television Service and was now big business. The total income for the first four months of this financial year to the end of July was over £½ million, of which about 10% was profit, so it was to be anticipated that the income for the current financial year would be approximately £1½ million with a profit of about £150,000. This was very encouraging, particularly as the more profitable sales were used to finance sales very cheaply to the Developing Countries, thus enabling us to penetrate Africa and Asia more and more. It was fair to say that British programmes were beginning to displace American programmes in Europe.

Mr. F.C. Brooker (E.i.C. London Sound) believed that out of a staff of over 20,000 the Corporation did not employ a single blind person. He asked D.G. if he would use his authority to see that at least some proportion, however, small, of blind people were employed in some capacity in broadcasting.

D.G. in reply said we did by statute employ a certain percentage of disabled people, but he did not know what the position was about blind people. He promised to find out and to let Mr. Brooker know.

Mr. R. de B. McCullough (H.E.Tel. Services). Would D.G. like to say something about "The Listener"?

D.G. The position was that the circulation had been steadily falling up to the end of last July and we were losing up to £40,000 a year on it at a time when economies were very much in everyone's mind. It was concluded when the previous Editor was due to retire that what was needed was to bring in a really skilled professional Editor from outside the Corporation, who would give "The Listener" a new look, increase circulation and thereby increase advertising.

We advertised this post and chose Karl Miller who had been Literary Editor of "The Spectator" and "The New Statesman" and enjoyed a great reputation in the periodical world. He had been given editorial freedom and had changed both its look and its content. Circulation was increasing and there were signs - but he would not put it higher than that - of more interest on the part of advertisers.

Difficulties had arisen with the Periodicals Proprietors Association because of a very unfortunate statement of intention issued by the BBC, with the agreement of the P.P.A., back in 1929 not to publish more than 10% of material not derived or taken from broadcasting. This rule had not been strictly maintained for quite some time and, after all, 1929 was a long time ago. D.G. felt it was time to be casting off this shackle and to be developing "The Listener" in a way which made it a more attractive magazine, and one which ceased to be subsidised. The P.P.A. objected to its being subsidised and yet they illogically objected to our trying to develop it in a way which no longer made subsidising necessary.

D.G. suspected the real trouble lay in a fear of competition from a successful "Listener" but in the meantime discussions were continuing with the P.P.A. in an endeavour to define our policy both for "The Listener" and "The Radio Times", which was also being developed with a magazine element.

Mr. G.E. Salter (H.E. Wales). Was it possible to negotiate a change in our licence to permit broadcasting by wire? He thought this would have two advantages. Firstly, there were many parts of the country where reception would only be possible via Relay Companies for many years to come and it seemed wrong that we were precluded from participating in this often profit-making venture. Secondly, the Post Office rental charges for links were very high in relation to the capital charge of a BBC link.

D.G. Taking the second part of the question first - discussions were going on with the Post Office about our desire to provide more links ourselves and thereby save money. It was a difficult time to be tough with the Post Office when we were relying on them to be our advocates for a higher licence.

Regarding our broadcasting by wire, D.G. asked D.E. to reply. D.E. said that this matter had been raised at the time of the Pilkington enquiry and the G.P.O. were very much against it. The Post Office had only continued the franchise of the existing wire distribution companies on a very tentative basis. They were always talking about integrating distribution of programmes with distribution of telephone calls, facsimile and all the other communication procedures.

D.G. added that there was not much joy in trying to change a Licence or Charter during the course of its existence and the time to say anything effectively about this would be when the next Broadcasting Enquiry is set up to lead to the new Charter and Licence from 31st July 1976.

Mr. G.M.B. Rankin (Assistant to C.E.X.B.) What was the future policy in regard to stereophonic broadcasting?

D.G. It was difficult to envisage any considerable developments in stereo until our financial future was assured. Once we were assured of a £6 licence, although this was not going to lead to any increase in the Radio-only licence, we could have another look at this problem.

D.E. added that this was tied up with negotiations with the Post Office that we should be allowed to extend stereo circuits over the whole country.

Mr. J.D. MacEwan (H.E.N.I.) Was it anticipated that there would be any change in the role of the Regions over the next few years?

D.G. Here again, finance was an important factor. He had been hoping for a really careful examination of the role of the Regions over the next few years, particularly in television. He felt the role of the Regions in Radio was clear and well-established, but television was a much more awkward problem. Some time ago he had set up a Working Party under D.Tel., but owing to other developments in Television, notably colour, it had not yet met. However, he hoped it would be holding its first meeting before the end of the month and that the work of this Working Party would lead to a re-thinking of the role of the Regions, particularly the English Regions.

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D.E. thanked D.G. for his talk and for answering questions so fully.

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Before giving his talk, D.E. welcomed those who were attending the meeting for the first time, namely:-

R.H. Belgrove, E.i.C. C.M.U.
A.R. Cockrill, E.i.C. Burghead
J. Jarvie, E.i.C. Operations, N.I.
A.F. Manners, E.i.C. Communications, London
R.B. Mobsby, H.E.Tel.Network
C.H. Richardson, E.O.Eng.(R. & T.)
R.P.A. Salino, E.i.C. Thrumster
E.J.T. Silverton, E.i.C. House Services, Radio Broadcasting
A.R. Stanley, Proj.E.Tel.
D.N. Vincent, E.i.C. Orkney
J.R. Wakefield, S.E.R.B.(Equipment)
D.A.V. Williams S.E.T.(II)

and J.R. Sandison, R.E. F.E.R.S., at present home on leave.

Since the last meeting there had been several retirements, notably M.J.L. Pulling (D.D.E.), E.C. Drewe (H.E.D.), R.S. Meakin (S.E.Tel.Rec.), W.D. Hatcher, C.J. Dolan, D. Hinchliffe, L.R. Laurenson, E.M. Sayer and - regretfully through ill health - W.W.R. Beer, E.i.C. Rampisham. In the near future, Messrs. Brooker, Hember, L.F. Lewis and J.B. Webb would all be retiring.

Apologies for absence had been received from Messrs. Anstey, Jackson, L.M. Robertson, Balston, P.E.F.A. West, Mortimore, Fox and Busby.

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TALK BY DIRECTOR OF ENGINEERING.

D.E. said he would deal with some of the many things which had been happening during the past year. There had rarely been a year of such activity and when so many points affecting the future had been decided. For the first time for years many uncertainties had been removed. We had got more than a 10-year programme in front of us. As D.G. had said earlier, we had not quite got the £6 licence settled but in expectation of this the Budget had been framed for quite a few years to come. Also there was the added incentive that if we could make colour popular, we could earn extra revenue directly proportional to the number of colour licences in force.

Improvements in Coverage of BBC-1 and BBC-2.

BBC-2 coverage had gone ahead well and by the end of this year would reach 70% of the population. This was far in excess of anything we did on BBC-1 and far in excess of anything the ITA did when they started. There were 8 high-power and 7 relay stations in operation and of these, 3 relay stations had been built this year. Six relay stations would be in service by the end of the year and work was in hand for a further nine high-power stations and a corresponding number of relay stations next year. This had been done at a time when we had still been improving the 405-line service and here we were in a cleft-stick - we had got to increase the 405-line service, but the better we made it, the more difficult it would be eventually to replace it by a 625-line service on UHF. We were now at Stage V of the relay station programme and he hoped that this would be the final stage and that the start of the duplication service would be an indication that it would be unreasonable to expect us to do any more to improve coverage on 405 lines. About ten VHF relay stations had been built during this year and it was hoped to complete the whole of Stage V by next year or the year after.

Colour.

The most notable event of the year had been the start of Colour Launching on July 1st. It had made a good start with remarkably few troubles and in particular had avoided making a lot of the mistakes which had been made in the U.S.A. in their initial stages of colour transmissions. Colour had been radiated over almost the whole of the BBC-2 network. The only factor which had prevented our radiating over the whole network was the failure of the G.P.O. to get some of the links ready in time, but as these had become available, we had radiated colour and achieved good quality.

D.E. said that during his recent visit to the United States, he had viewed a considerable number of colour transmissions, chiefly in Control Rooms where the colour quality had improved enormously since he was in the United States about two years ago, particularly in the NBC studios where the quality was excellent.

The most important factor was the care taken in setting-up and the type of system used, e.g. NTSC or PAL, made little difference. The big differences were all on the R.G.B. side of the picture and reflected either careful or sloppy setting-up. The NBC took the most care and had a very good routine for adjusting colour quality and for getting equality of colour fidelity between various cameras. We still had a lot to learn, particularly as regards lining-up between cameras. Work was still going on to decide the type of camera to use and the most important factor was the lining-up of cameras and monitors, rather than the particular type of camera which was used.

As D.G. had already mentioned, a most important development had been the field store converter. This had been a really remarkable achievement which gave a very high quality picture. It had been accomplished in record time and the Designs Department team responsible for this development were very much to be congratulated. He had no wish to disparage the efforts of Research Department who were continuing to work on an improved type of standards converter and he hoped that by the end of this year, both types would be available. It would then be possible to decide whether to use both types and, if so, how many to order of each.

Radio 1.

There was not much he could add to what D.G. had already said, except to mention that on the ship home from his recent visit to North America, the radio operator had mentioned and demonstrated that the signal strength of the combined 1214 kHz transmissions as received about 300 or 400 miles off the coast of Northern Ireland was actually less than the field strength of the signal received from the "Caroline" ship-borne transmitter. Whether this was due to sea-gain or sea-conductivity, or whether the short aerial on "Caroline" had got a high angle radiation we did not know, but it was an interesting point for consideration.

Ascension Island.

The building and commissioning of a H.F. Radio Station on this remote island was a remarkable achievement which had been accomplished on time and, most important, within the Budget provision.

UHF Reception and Duplication of BBC-1.

During the year an assessment had been made of UHF reception and in particular to see whether UHF could give as good a service as VHF. A test was carried out in London, the Midlands and the Lancashire areas with most satisfactory results and was one of the decisive points in coming to a conclusion as to what we would do in changing over from 405 to 625 lines. The reception report showed that provided the aerial installation was good, satisfactory reception of UHF could be obtained for 98% of the population within the defined contour and the remaining 2% could probably be taken care of by additional relay stations or by line feed. It was, therefore, possible to visualise a situation in which the UHF network could be built up to a point where it could take over BBC-1 as well as BBC-2. Discussions had been going on for many years, both within the BBC and with the GPO as to what should be done to get out of the impasse on 405-lines. If it were possible it would be preferable to replace the 405-line VHF service by a 625-line VHF service and the BBC had pressed the G.P.O. very hard to extend Band III above 216 mHz up to, say, 270 - 280 mHz which would have given us the space to have duplicated the BBC-1 and ITA transmissions in VHF. This would have saved quite a lot of transmitters and it would have been of advantage to the receiver industry, in that the VHF receiver is cheaper to manufacture and easier to tune than the UHF receiver. However, we were defeated on grounds of Defence needs and were encouraged to give up our pressure for additional frequencies in Band III by the excellent results of this appraisal of UHF reception.

It has been agreed, and made an essential condition by the Industry, that the BBC and the ITA should begin duplication on the same date. For a time the ITA argued that both organisations should not only start on the same date but expand at the same rate. This would have been unrealistic; it would be impossible to keep two programmes of construction going at the same rate and it was hoped that in any case we could proceed at a much faster rate than the I.T.A. It had therefore been agreed that we would simply be

committed to starting on the same date in London, Midlands and the North and that the starting date would be either late 1969 or, more probably, after February 1970. The deciding factors in this were the rate at which the Post Office could provide the circuits and also the rate at which the ITA could build their stations.

This additional programme of work impinged on the BBC-2 programme of work and there had been a lot of discussion as to the rate of progress at which each should proceed and finally a compromise had been reached. It had been decided to cut down the rate of building BBC-2 stations after 1968 to 3 main stations and an appropriate number of relay stations per year, which would enable us to make a start on duplication to the extent of 6 stations per year. By 1972 or 1973 the duplication of BBC-1 would have caught up with the expansion of BBC-2 and from that date stations would go ahead together. It would certainly take until 1980 and probably until 1985, or perhaps even later than that before we achieved a figure where UHF coverage was comparable with the VHF coverage, at which time an announcement would have to be made that as from a given date, 405-line transmissions would cease. By then the Industry would only be selling single-standard receivers, so it was probable that not too long notice would have to be given of the withdrawal of the 405-line service. By, say, 1990 the VHF band should have been cleared and if broadcasting was still being carried out in the same way as at present, the intention was that the VHF bands would then be re-engineered for two further 625-line programmes and the U.K. would be into its final condition of having six transmissions on 625 lines.

Medium-Wave Broadcasting.

This seemed to be having a re-birth and we were now talking in terms of considerable expansion in the future. A small example had been Radio 1. In Europe as a whole medium-wave broadcasting generally seemed to be having a renaissance and people were building new stations, some of which were at very high powers and at the present time the BBC was being very much left behind. Proposals had been put to the G.P.O. which would have to be discussed, but in any case it looked as if there would be a new Copenhagen Conference sometime in the early 1970's. It was impossible for it to take place before 1970, but it might be quite soon thereafter and it was important for us to get our ideas clear as to what we thought we should ask for at this new Conference.

Local Broadcasting.

This had been covered by D.G. but the selection of sites, the provision of equipment and staff had gone very smoothly.

Stereophony.

This was tied up with the difficult question of our relations with the G.P.O. and with the question of money. We had been trying to get the G.P.O. to extend the authority they had already given us to provide stereo links as far as Holme Moss, so we could put a stereo network all over the U.K. But as D.G. had already pointed out, it was a very difficult time to take up these matters with the Post Office when they themselves were in a state of flux and also when we were pressing them to increase the licence fee.

Satellites.

D.E. had been present at a speech given by the Vice-President of the Communications Satellite Corporation (COMSAT) U.S.A., who had said

most positively that he was opposed to the use of satellites for what he called "dedicated" services, i.e. exclusive services such as broadcasting, and that economies of cost and of frequency availability made it necessary to use satellites as common carriers for all services. He thought this was an indication of the point of view of the people controlling satellites and he imagined the GPO would have the same view.

On the other hand, in Canada CBC were very much hoping that they would get permission to put up a satellite to give a service to the whole of Canada. CBC's technical men felt that whilst this was a good idea, it was not possibly as good for Canada as for some other countries, because of the extremely low angle of elevation of the receiving aerial in northern Canada.

D.E.'s own opinion was that it was very unlikely that we would ever persuade anyone to let us have a satellite and channels available only for broadcasting purposes.

Pay Tv.

In America this seemed to be regarded as a dead issue. The Pay Tv people were having a very hard time in getting started in black-and-white and the problem of coding and decoding in colour was extremely difficult, and they were rather pessimistic. The broadcasters seemed to have given up worrying about Pay Tv, and the same may apply in this country, but it was important to differentiate between this and wire transmission which was becoming very popular in the United States, particularly in places like New York which were extremely difficult for radio reception, and which might well become very popular in this country. However, we need not worry too much, because we would still get the licence money, whether the viewer used wire distribution or radio.

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Mr. B.J. Slamin (E.i.C. Communications, Wales) asked D.E. for his views on the suggestion that in the duplication programme for BBC-1, some existing VHF reception problems could be solved by placing BBC-1 UHF transmitters on existing BBC-2 sites earlier than might otherwise be planned.

D.E. We were doing this as far as possible.

D.D.E. added that the time-scale was such that there was limited advantage in doing this, but the point was being borne in mind and it would be done where applicable and possible.

Mr. G. Salter (H.E. Wales). said he had recently visited one of the South Wales valleys where we had opened the first of the Wenvoe relay stations carrying BBC-2 and this was a typical example of an area where 98% of the population already received their television by wire. No one was going to "come off the wire" until they could receive all services satisfactorily by radio and he felt that there was no point in putting up a BBC-2 relay station when the BBC-1 service was impossible to receive.

D.E. Despite what Mr. Salter had said, there had been considerable pressure to get BBC-2 into those areas. It would be very difficult to advance duplication ahead of the agreed plan.

D.D.E. The question also arose as to how we were to get the 625-line duplicate programme there. This was a major problem and could not be done ahead of the agreed starting dates, unless we had special links for the

purpose, which would be very expensive. Everyone was well aware of the difficulties and it might be that once the main BBC-1 stations had been duplicated, the order of priority of the relay stations would take account of this problem.

Mr. K.C. Chalk (E.i.C. Operations, South and West) asked if the Americans had yet made any objective decision on the merits of the three or four-tube colour cameras.

D.E. thought the position in North America was just about the same as it was here; there was no definite conclusion as yet. The North American Philips people were satisfied with the three-tube camera. CBS said they were satisfied with the three-tube camera and thought it unlikely that they would buy any more four-tube cameras. At present NBC had got three-tube cameras and a very small number of four-tube cameras and seemed to be undecided as to what they would buy in future.

Generally the four-tube camera had more support than the three-tube, on the grounds of the sharpness of the picture and ease of handling, but some people would argue to the contrary. The setting-up of the cameras and the general tidiness of operation was most important. He had made a special point of asking the various Companies about their methods of lining up cameras.

CBS said they did not think very much of the 'colour guard' and thought the Quinn device too complicated. At present they said (although there was little evidence of this in the studios) the best thing was to line-up a colour monitor to give as good a match as possible with a black-and-white monitor. This seemed logical except for the argument that the colour temperature of the selective black-and-white tube was about 9,000°C. - a very blue sort of picture - while it was agreed that the colour temperature should be around 6,000°C. On the whole the CBS picture were quite variable.

ABC picture quality was better and the results more consistent, despite the fact that there was a strike going on at the time. They used a centralised form of adjustment, although there appeared to be no actual terms of reference for white balance. No dimmers were used on any front lighting which affected the actual colour fidelity of the picture, only on back-cloths, cycloramas, etc.

NBC picture quality was very good indeed and this was largely due to the operational skill and expertise of the staff. NBC did no dimming in the studio, but when necessary, simply adjusted light intensity by inserting pieces of polythene mesh called "Scrim" in front of the projector.

To sum up, in answer to the original question, things were still in a state of uncertainty in the U.S.A. There was a great demand for the G.E. four-tube camera which was a great success. The Marconi camera was regarded as very good in colour and picture quality, but everybody had suffered faults on this camera. D.E. had been asked about the E.M.I. camera, but had to admit that so far we had no operational experience of it. The Canadian Broadcasting Corporation said they were very satisfied with the R.C.A. TK.42 and the G.E. 250 cameras.

Dr. K.R. Sturley (C.E.X.B.) referred to the UHF Reception Report which had received considerable publicity and asked D.E. if he had any advice to staff who might in the future be asked to give viewers their opinion on individual cases of colour reception.

D.E. Advise viewers to read the excellent E.I.D. publication on "How to Receive BBC-2 and Colour"; also the explanatory leaflet about the make-up of, and observations to be drawn from, the Colour Test Card.

Mr. L.W. Turner (H.E.I.D.) added that E.I.D. were now concentrating on the "Colour Comes to Town" exhibition as a means of getting colour over to the public direct.

Dr. K.R. Sturley (C.E.X.B.) asked if the fact that the rental companies were likely to be the main suppliers of colour receivers to the public, would make it any easier for us to get over the importance of correct lining-up, aerial, etc. than to the individual dealer.

H.E.I.D. said Rental Companies were supplied with all information through the Electronic Rentals Association.

Mr. I.S. Dinnis (E.i.C. Stagshaw). Were current plans for modifications to, and automation of, existing medium-wave transmitting stations likely to be affected by the possibility of another Copenhagen Conference within the next few years?

D.E. did not think so. It was impossible for organisational reasons to have another Conference before 1970, it would last for a minimum of six months and it would take 18 months to 2 years for any new Plan to be put into operation, which would mean the autumn of 1972 at the earliest. Therefore he thought any present plans for increased efficiency would have paid for themselves before any new Plan came into operation.

Mr. D. Burgess (E.i.C. Aberdeen) reported good reception of Droitwich 200 kHz in Aberdeen and asked whether he would be very naive in suggesting that something different might be broadcast on VHF sound rather than duplicate the transmission on medium waves.

D.E. thanked him for the reception report. The point had been made by the Industry and many people over the years that VHF would be much more popular if it were putting out something which people could not get on medium waves, but it had proved impossible so far to see any major programme going out in this way. Local broadcasting would be on VHF and if it proved so attractive that people bought VHF receivers in order to hear it, this might be reflected in putting one of the main programmes on to VHF only.

Mr. F.J. Knowlden (E.i.C. Norwich). Following on this question, suggested that when "Radio Caroline" finally closed down, there would be a number of blank spots for "pop", particularly in his part of the country and it might be worthwhile to consider putting the Popular Music Service (Radio 1) on to VHF in place of Radio 2, since they seemed to have adequate coverage of Radio 2 on long waves.

D.E. felt there would be difficulties over the relative attractiveness of programmes.

D.D.E. There was the added argument that the sort of people who liked Radio 1 usually had the cheap type of receiver without long waves or VHF and this might not, therefore, be the best sort of compromise.

Mr. K.G. Nicholas (E.i.C. Southampton) said that one of the most critical adjustments on a colour receiver seemmed to be the setting of the grey scale. Why, therefore, did the BBC not radiate a step wedge as part of the Trade tests? Servicemen could buy generators to provide this facility, but they were very expensive - more so than convergence generators - and he felt we should radiate the step wedge for, say, 5 minutes in every hour.

Mr. S.N. Watson (H.D.D.) thought this was a good point and well worth considering. The difficulty was finding sufficient time to radiate every desired test signal, but Test Card F did contain a normal grey scale which could be used by the Serviceman for setting up the correct tracking of the receiver.

Mr. H.V. Sims, E.T.D. A number of dealers had complained to him about the short time for which Colour Bars were radiated.

H.E.I.D. said the timing of the Trade Transmissions and the composition of Test Card F had all been agreed with BREMA and in point of fact he had received a number of requests to reduce the duration of the Colour Bar transmissions for fear of printing on the tubes.

D.D.E. thought it would be helpful to a serviceman who might be sitting at the back of the receiver, to have a sound announcement when the picture was changed.

H.E.I.D. agreed this was a good point.

Mr. B.J. Hartley, (E.i.C. Tacolneston) had found it necessary to make fairly frequent adjustments of saturation on the receiver between different programme sources, in particular between film and studio shots. Was something being done to stabilise saturation?

D.E. agreed this was a very real problem and thought it was an example of where we needed to build up more expertise in measuring and adjusting, in order to overcome it. It was a problem which also existed in the U.S.A.

H.R.D. Since differences between cameras and film had been mentioned, he would add that there was a fundamental reason why on film the saturation was low, because you could not get the same saturation with the dyes that you could get with electronic signals. Masking techniques could do this, but only within the limitations allowed for by the signal-to-noise ratio. With a very bad film one could not always do this to the extent one would like. He thought there would always be difficulties in matching film and cameras.

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NEW TECHNIQUES IN TRAINING AND TEACHING METHODS: TALK BY HEAD OF ENGINEERING TRAINING DEPARTMENT.

H.E.T.D. said he was pleased to have this opportunity of telling many former pupils of Wood Norton something about new techniques in training at E.T.D. and to describe the new teaching methods. He was not going to talk about the syllabuses of the courses for the various categories of staff; these, he hoped, could be discussed with the Es.i.C.

The equipment and facilities at Wood Norton had improved enormously during the last few years, particularly in the last eighteen months. The colour television equipment was of the most modern type, and there had been considerable improvements in the other equipment, for which he was indebted to the Chief Engineers for their support.

Organisation of E.T.D. and Facilities at Wood Norton.

With the aid of slides he would show the organisation of the Training Department and some of the facilities provided at Wood Norton. Firstly the organisation:-

H.E.T.D.
(H. Henderson)

Head of Technical Publications Section (S.W. Amos)	Eng. Maintenance Section (H.V. Sims)	Technical Operations Section (G. Mackenzie)	E.T.D. Executive (A.J. Porter)

Messrs. Sims, Mackenzie and Amos, who were present at the meeting, would be pleased to discuss with Es.i.C. the work of their respective sections.

Further slides showed the Television Training Studio taken in January of this year when the lighting installation had been completed - there were now 33 barrels of lighting using most types of lanterns found in studios, with two lighting control equipments to handle the installation - and the production Control Room. These facilities allow both advanced lighting training and basic crew training to be carried out.

In the fundamentals engineering laboratory was a servo training unit which will be used on servo-mechanism courses in course of preparation. A fully-transistorised waveform synthesiser and its output, shown on an airmec display 'scope, illustrated the components of a square wave.

The Transmitter Hall contained the small vision and sound transmitters, standard test equipment and UHF measuring equipment. Also shown was a Radio News Continuity set-up used for training of Sound Technical Operators. This training would continue on a reduced scale as a result of the decisions regarding Sound Operations.

In the colour television block, completed last May, was the central apparatus room, the 35 mm transparency scanner, the monitor room containing three sets of monitors where three groups of students at a time could carry out lining-up exercises and a small colour video laboratory. It was hoped to complete a small colour studio in the near future when finances allowed. In concluding this series of slides, H.E.T.D. reminded the meeting of the external courses which had been run at Wood Norton which included a colour television course for Technical College Teachers who would organise similar courses at their own colleges - this course was over-subscribed and a further one would be organised in January; a month's course for University Closed-Circuit Television Technicians and a course on PAL colour television for eleven German Television Engineers.

New Teaching Methods.

The clearest identifiable new teaching technique which had been introduced is programmed learning. The first month of the T.A. course is now programmed and the first students trained would be reaching Es.i.C. just after Christmas. Programming would continue until at least half the T.A. course, i.e. the fundamental engineering section of the course, was programmed.

Programmed learning at its simplest meant providing the means for the student to learn without the intervention of a teacher. In preparing programmes precise understanding of what information is to be communicated must be determined. The knowledge and intelligence of the student must also be taken into account. The material to be communicated is then broken up into small steps, with questions following each step, so that the student could check for himself that he had understood what he had just read. It was

important to ensure that he could get the right answer, because without a proper explanation the student would become frustrated. The process of making sure the programme was properly explained was called "validation" and this would be done at the end of the programmed first four weeks of the T.A. course.

In order to measure a student's gain in knowledge a considerable amount of pre-testing and post-testing had been introduced and this in itself was a useful and salutary exercise.

It has been found that success in answering questions throughout a programme provides considerable motivation for the student. During the test period in 1966 a first class lecturer conpeted with a programmed lecture and the student performance was about equal, but the programmed lecture achieved the same level of knowledge in about two-thirds of the time taken by the lecturer.

A student could not sit all day with a programmed lecture in book form. In fact, about one hour at a time was about the maximum. Therefore, they had a question period, followed by about an hour of the programme book. There would then be a short break and students would return to what was known as a Feedback Classroom, of which there were two.

H.E.T.D. then explained by means of slides the layout of a Feedback Classroom. This included a screen with an overhead projector, replacing chalk and blackboard. Another screen, with a remotely-controlled slide projector, allowed the lecturer to project slides which posed questions having several possible answers to the students. The student had a press-button unit in front of him which allowed him to indicate to the lecturer which of the possible answers he thought was correct - A, B, C, D, E and ? (meaning 'do not know').

The lecturer had a control panel in front of him to control the projector, house lights, etc., and also had a similar set of answer buttons A-E. After posing a question the lecturer would press his key corresponding to the correct answer, e.g. C, and any student pressing his button C would immediately get a green light on his desk from which he would know that he had the correct answer. The instant affirmation of the rightness or wrongness of a reply was one of the essential features of programmed learning.

Adjacent to the control panel in front of the lecturer was a device which enabled him to see which students had selected the correct answers - the 'feedback' element of the Feedback Classroom. Groups of three lights - red, green and white - on this device corresponded to student positions in the classroom. A paper mask allowed the student's name to be placed under each group of lights and a grid under each name allowed a record to be kept of the questions with which a particular individual had got into difficulty which would be of considerable help with validation. About sixteen question slides would normally be used in a typical lecture period in the form either of a formal lecture or of a practical experiment.

If a significant group of red lights appeared the lecturer had to recapitulate. Students with continually wrong answers were given tutorial periods with individual members of staff. Many people, including visitors from Technical Colleges and H.M.I.'s, had been interested in the work of E.T.D. in this field, particularly in the Feedback Classrooms.

As an example of how programmed books might be used in a different way, a programme had been written which took students step-by-step through the operation and setting-up of tape recording machines. This allowed the lecturer's time to be more profitably spent in explaining to the students

the more elegant applications, such as editing etc., of professional tape machines.

The possibility of saving staff was not likely to happen for some time as the preparation of programmes and the validation of them was very time-consuming. Perhaps in another two or three years a saving in staff might be possible.

Training books - in a way a form of programmed instruction - had been produced by collaboration between representatives of Operations and Maintenance Departments and E.T.D., and these had been issued to T.O.'s and T.A.'s at the end of their courses at Wood Norton to guide them in their On-Station training period.

In conclusion H.E.T.D. mentioned closed-circuit television. Its use at the Training Centre was as yet in its infancy, but it had been employed for displaying on a big screen the waveforms of fairly high frequency phenomena which normally would only be viewable on a 5" Tektronix screen, thus useful information could be seen by a big group.

About a year ago E.T.D. experimented with a video tape recording on the subject of microphones. This subject had been chosen because of the difficulty of mounting demonstrations of microphones. They now had available, with the assistance of Further Education Department and S.Tel.Tech.Ops., three 20-minute V.T.R. programmes on microphones for teaching purposes at Wood Norton. For occasions such as this meeting and for use on stations 16 mm. films of these programmes had been made and H.E.T.D. ended his talk by showing the last few minutes of one of these films.

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D.E. commented that at an R.C.A. Symposium which he had recently attended in Princeton, Professor Everitt, the author of "Communications Engineering", talking on the subject of "New Teaching Methods" had stressed two points. Firstly, the need for an overall programme, even in terms of PERT diagrams, for the training of university students, and secondly, the point which H.E.T.D. had already made about the absolute necessity for feedback, otherwise the needs of the student would not be met at all.

Mr. B.J. Slamin (E.i.C. Communications, Wales)

(i) Did H.E.T.D. think the On-Station training books would be improved by the inclusion of selective answers in the same way as for programmed learning?

(ii) With reference to closed-circuit television, would it help people to keep up-to-date with developments if lectures were fed round the whole network?

H.E.T.D. So far as the training books were concerned E.T.D. wanted to encourage young people to find out answers in a practical sort of way and then to satisfy their seniors that they knew the answers before passing on to the next stage in the book. Selective answers were not suitable for this purpose. In answer to the second question, this had been discussed with C.E. Admin. and it had been suggested that the odd lecture might be circulated in this way. It certainly was an interesting possibility, provided sufficient video tapes and network time were available.

Dr. K.R. Sturley (C.E.X.B.) With regard to programmed learning, how was it possible for a student to overcome the difficulty of not having his own notes readily available for reference?

H.E.T.D. Although students handed back the programmed books which were issued for a certain period, E.T.D. did at a later date issue a sheet which summarised the information they hoped the students had learned from the programmed lesson. This sheet was deliberately printed with blank spaces so that a student could contribute important words and phrases from his own knowledge and then check against a master sheet that his notes were accurate.

Mr. R.J. Keir (E.i.C. Skelton) Had H.E.T.D. any advice on the treatment of staff after they left E.T.D., and particularly in encouraging them to continue their academic studies?

H.E.T.D. said he would like to see the spread of the on-station training book and would be very pleased to co-operate with Es.i.C. in this matter. This would also ensure that there was continuity between Wood Norton and the station. During the first three or four months on a station they should find out as much as possible about it and should apply the sort of understanding E.T.D. had given them. After that period they should begin their correspondence course or technical college attendance in preparation for the Grade C course. Appropriate City and Guilds Certificates followed quite closely the lines of study relevant to the preparation required for a Grade C course and staff should be encouraged to follow such lines. The final certificate of the standard of the third year of the Telecommunications Course would waive the Grade C selection board.

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D.E. thanked H.E.T.D. for his interesting talk and declared the first morning's meeting closed.

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D.D.E. opened the second day of the meeting by apologising for D.E.'s absence owing to extreme pressure of work following his return from three weeks' absence in North America.

He then welcomed Head of Publicity to give his talk:-

PUBLICITY POLICY IN THE CORPORATION

H.P. began by describing the make-up of Publicity Department. It was a department of 120 people and was wholly responsible for publicising the BBC on a world-wide scale. The total staff was about equal to the combined publicity staffs of ITV and this staff had to publicise Radio and External Services as well. To do this they used all the customary media other than advertising. Within the BBC there was no objection in principle about advertising but it was an expensive way of providing information to the public about the BBC's affairs.

The department carried out its work from three centres; the department headquarters at Cavendish Place, undertaking central administration, photography, projects and radio publicity; the Television Centre, dealing with all publicity and enquiries about television, and the third centre at Queen's House in the Kingsway, which was the home of European and Overseas publicity operations.

The main streams of activity within the department were, conveniently enough, 5 P's - Press Relations, Photography, Projects, Printed Publicity and Public (or more realistically Private) Relations.

Press Relations.

This was the main outlet for news about the BBC. His Press and Publicity Officers served the entire British press, from the mass circulation news-

papers to the small specialised journals. The "BBC Spokesman" who was so often quoted could be one of several people empowered to deal with the Press - himself, A.H.P., Press Officers and Publicity Officers. The service which they gave to the Press was generally recognised to be the most comprehensive in this country, perhaps even in Europe. It was virtually round the clock, 365 days-a-year and 366 in Leap Year. This service took two forms - the first the issue of publicity material designed to appeal to journalists, and the second answering questions on any subject touching the BBC. Every day the Press gave about five to six times more space to the affairs of the BBC than to ITV, and in the course of a week, the BBC was mentioned between 700 and 1000 times. The first reason for this was that the BBC was news, whatever it did. It was also something to do with the ability of Publicity Department to provide the service which the Press wanted, even though at times this was a negative one in terms of the BBC having to say "No Comment". Generally speaking they tried to say "We have nothing to say on this subject at the moment".

The core of regular television correspondents, of whom there were about 15 working every day on the news about broadcasting, in addition to the critics, actually had their office in the Cavendish Place headquarters of Publicity Department. They had their own Press Room, equipped with a television set, radio and telephones, and this room was located right next to the Press Office. They were very much "on hand". This had many advantages and, equally, many disadvantages.

H.P. then showed a selection of slides covering the range of publicity material. Five Press Information sheets - two for Television, two for Radio and one for Music - were issued on a weekly basis to every newspaper in the country. In addition specialist bulletins on education and religion were issued monthly. Even more specialist bulletins or handouts, were issued to very specialised magazines, numbering about 75 in all and ranging from agricultural journals to zoological journals.

Photographs.

Alongside the issue of written material they distributed more than 125,000 photographs a year to the Press. Only a small fraction of the photographs issued were actually used, because the BBC was in competition with an avalanche of photographs from Show Business, from big organisations, from Government Departments and, indeed, from its own competitors in television. The photographs ranged from personalities and studio shots to glamorous studies of field store converters! In addition facilities were given to Press photographers to take their own photographs.

Projects.

The third major activity of Publicity Department was called "Projects" - really Promotions. These were exhibits and displays of all kinds currently including the campaigns to promote colour, the expansion of BBC-2 and local radio. Projects Section produced large amounts of commercially-styled point-of-sale material for retailers' shops and rental companies, including such things as buttons for Radio 1 fans and colourful playbills.

On occasions of special campaigns, Projects Section set up special exhibitions in local stores including, if possible, a celebrity dais. They would supply local newspapers with editorial material, the basis of which could be used in connection with all kinds of advertisement. When specific exhibitions were being held, Projects Section put up a small exhibit which was relevant to the theme of that exhibition, for example the Dairy Show and a Religious Broadcasters convention. Other examples were the T.U.C. and Party Conferences, where Publicity Department was particularly keen to keep delegates informed of the times at which special reports on the conference were being broadcast in Radio and Television.

It was the Projects Section, in collaboration with E.I.D., which ran the BBC side of the "Colour Comes to Town" exhibition. H.P. showed a number of slides of this exhibition, which was proving very successful, having been attended by 28,000 people at Croydon and by 30,000 in Bournemouth.

Printed Publicity.

The next "P" was "Printed Publicity" of which there were three types. Firstly the established publications such as "BBC Handbook" and BBC Record which were now almost part of the fabric of the BBC. Publicity Department had entire editorial responsibility for the Handbook as well as for its financing. BBC Record was designed to look formal in appearance. Attempts to make it look brighter had failed and everyone preferred it just as it was. It was aimed primarily at Members of Parliament and other leaders of opinion. It was a very important document to the BBC and we were very flattered when the ITA copied it and produced a leaflet called "ITA Notes".

Factual leaflets also went out to a large number of people, including all Members of Parliament, Women's Organisations, etc. on subjects such as VHF Sound. As part of BBC policy, pamphlets were issued on such things as "What Price Culture" by D.G. and included written records of all BBC Lunchtime Lectures. These were regarded as of great value and were constantly referred to. It was interesting that there might be no publicity on the day following a Lunchtime Lecture, but two or three weeks afterwards, when the written text appeared, we often found a long column about it in the newspapers or a leader in the Times.

Leaflets were produced on different types of programmes including, for example, the General Election 1966, Women's Hour and "The Wars of the Roses". This latter proved very popular having been done in the form of a broadsheet which could be opened out and used as a poster. Our output in Printed Publicity was very large. In fact, the BBC was one of the largest publishers in the country in terms of print.

Public Relations.

The last "P" was Public Relations. The BBC had no Public Relations organisation as such, but on the other hand, liked to think that all members of staff could be public relations officers and could be vocal about the BBC and its affairs. The face of Public Relations was changing, but the communications which Publicity Department had with the public were based on information and cold fact. They were not out to create an image for the BBC or impose one on it. The BBC's image was determined by the programmes which it radiated in Radio and Television. It was, however, often necessary to explain changes in the image and discuss the BBC's attitude in areas beyond the Press. Publicity Department and E.I.D. did this with Industry. Some members of Publicity Department and those beyond it, had a special responsibility for keeping Members of Parliament informed in ways other than through BBC Record. No facet of society was regarded as so unimportant that the BBC should not bother to try and explain. The Party Conferences offered an opportunity of meeting and talking to a wide range of politicians who, in the end, needed to know the measure of the BBC in order to decide whether the £6 licence fee would be justified. At the recent Labour Party Conference in Scarborough, Publicity Department had mounted a reception which was attended by the Prime Minister and most members of the Cabinet. This, and other meetings there, were most valuable as "conversation pieces" and as a means of making contacts. Inside and outside the conference hall the BBC had made its presence known and H.P. illustrated this by means of a number of slides.

In conclusion H.P. said he had touched only briefly on some of the aspects of Publicity Department. There was no feature of BBC activities which did not at some time come into his In tray. The world was certainly their window; they were all-purpose men trying to explain. It was Publicity Department's job to try to make the BBC intelligible to the public. It was their job to try to explain the principles of public service which motivated the BBC and at all times to sustain its reputation. In this job they valued exceedingly the help which they received from their Engineering colleagues whether in London, or as far away as Ascension Island.

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Mr. J.D. Esler, Eng. R. & A.O. (1) He attended many careers conventions and exhibitions and at these the BBC usually looked like the poor relation as regards its careers exhibits. Could Publicity Department do anything to help Engineering Recruitment at these exhibitions? (2) It would be very helpful if he could know what literature Publicity Department sent to University Appointments Officers.

H.P. All careers matters fell within the jurisdiction of H.App.D. Publicity Department did provide some displays for careers exhibitions but all this was handled by H.App.D. If more solid help were required, Publicity Department would be glad to help and also provide any printed material.

Mr. I.S. Dinnis, E.i.C. Stagshaw. Would it be possible for Es.i.C. in Regions to have copies of the publication called "BBC Facts"? It was to local Es.i.C. that the general public often turned for odd pieces of information rather than to their local newspapers.

H.P. If Es.i.C. thought this would be valuable to them he would be most happy to supply.

Mr. J. Jarvie, E.i.C. Ops. Northern Ireland. Could H.P. please give his views on using the broadcasting media as a means of promoting such things as VHF Sound, e.g. in presentation spots in Television.

H.P. He was naturally in favour of this but could imagine how boring it could become for listeners and viewers. He thought care was needed in order not to alienate viewers or listeners with too much propaganda. Viewers already complained about publicity given to forthcoming programmes - some said the BBC was even more commercial than the ITV! Broadcasters were sensitive about this, but did what they could in respect of such things as "Colour Comes to Town" and VHF Sound.

Mr. J. Jarvie. He was thinking in particular about the reception difficulties in regard to Radio 1 and Radio 2 and felt that much of this was due to people mis-managing their own receivers.

H.P. Quite right. An article would be appearing shortly in Radio Times on this particular trouble.

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D.D.E. thanked H.P. for a most interesting talk. He was sure everyone present was most grateful to him for giving them a glimpse of the tremendous ramifications of this very important department.

THE USE OF SATELLITE COMMUNICATIONS IN CONNECTION WITH BROADCASTING
by D.D.E.

D.D.E. said this was a difficult subject because ideas were changing rapidly and it was hard to establish exactly what was happending. It was a fascinating subject which fired the imagination; it seemed to be science fiction come true, but like so many of these ideas, one could only too easily be carried away into the realms of imagination.

There were three possible uses of satellites in connection with broadcasting - first as links for occasional long-distance relays and this had now become commonplace. The second was as permanent programme distribution networks, and feasibility studies which had been carried out so far indicated that these would be both economic and practical in a few years' time, but would be essentially applicable to large areas where the same programme was needed. The third possibility was for direct broadcasting. This idea was stimulating great interest and might become practicable in the early 1970's where a wide area had to be covered with a limited number of programmes. It was even probable that experimental transmissions for home listening and viewing might be tried out in the U.S.A. in the foreseeable future.

Sizes of Satellites.

For occasional relays between distant points, a communications satellite could be used. This might be relatively low-powered (as light as 100 lbs) as it would be used with very complex receiving stations like Goonhilly with its 90-ft. diameter steerable aerial system. Most European countries were not likely to need more than one of these stations, though some of the stations might have two aerial systems in case they wished to work in two directions simultaneously.

For programme distribution networks within a given group of countries, the capital and operating costs of a large number of ground stations of the above type would be very expensive and would probably cancel out any saving over the normal microwave link system. For this purpose rather larger satellites had therefore been planned (about 550 lbs) in conjunction with somewhat simpler receiving stations, with about 20-ft. diameter aerials.

For direct broadcasting involving practicable domestic receiving installations, much larger satellites would be needed, weighing between 6,000 and 8,000 lbs. with transmitters of several kilowatts. These would have much greater radiated power and would rely not on atomic power, but on solar energy.

Orbits.

The early communication satellites such as Relay and Telstar had relatively low elliptical orbits. Telstar I, for instance, which was in operation from July 1962 to February 1963 had a perigee of 500 miles and an apogee of 3,000 miles. This suffered seriously from radiation effects which knocked out the solar cells from which it received its power, because the satellite spent too much time in the high intensity radiation belts which surround the earth at a radius of about 500 miles.

Telstar II had an orbit varying from 600 to 7,000 miles from the earth and lasted from May 1963 to May 1965, being successfully used to relay part of the Olympic Games from Japan in October 1964.

These relatively low elliptical orbits resulted in very high speeds - about 18,000 m.p.h. and orbital times of about an hour-and-a-half, out of which the satellite was visible to the sending and transmitting ground stations for between 15 minutes and half-an-hour. As a result, the computers were kept hard at work to decide when a circuit was likely to be available between any two points.

At one time it was thought that a satisfactory communication system could be established by having chains of satellites following each other round the earth with roughly circular orbits. Technical opinion had now hardened in favour of a synchronous orbit. This was sometimes referred to as a stationary orbit, but this concept was a little misleading, because one might think that it would be possible to have an orbit stationary over any selected part of the earth's surface. This would be quite impossible. It was clear that a satellite in orbit had to rotate round the earth and it could only be effectively stationary if it were spinning with the same angular velocity as the earth over a point on the Equator. Even then, owing to precession effects, it was not always exactly over one spot and oscillated slightly, so that some tracking was still needed at ground stations with very high gain aerials.

Communication Satellites.

It was in the field of international communications that the big financial returns were expected, so the various official bodies had been getting together to organise a system between them. Many different organisations - international, national and commercial - were mentioned and it was sometimes difficult to keep pace with them all.

The main international committees were:-

INTELSAT	-	The International Communications Satellite Consortium
I.C.S.C.	-	Interim Communication Satellite Committee, which was the Steering Group for Intelsat.
COMSAT	-	The Communications Satellite Corporation of the United States. This was a commercial profit-making organisation, not an official Government Department, but spoke on behalf of the U.S. in the I.C.S.C. and in Intelsat. (The official U.S. space body was the National Aeronautical and Space Administration (N.A.S.A.)).

In Europe, in addition to representation on Intelsat, there was:-

C.E.T.S.	-	European Conference on Space Communications, which was not an organisation, but a continuing conference.
E.L.D.O.	-	European Space Vehicle Launcher Development Organisation.

E.S.R.O. - European Space Research Organisation

In the United Kingdom there was:-

N.I.S.C. - National Industrial Space Committee

I.D.S.S.P. - Interim Defence Communications Satellite Project.

The initial experimental communications satellites were Relay and Telstar and these were followed in February 1965 by INTELSAT I (Earlybird). This weighs about 90 lbs. and is located between South America and Africa over the Equator. This can handle about 240 telephone circuits and about 3 watts of power and is expected to have a total life of three years. It is now fairly near the end of its life and it was known that it would shortly be drifting off course. These satellites had to be maintained on course by a discharge of gas jets and it is believed that Earlybird has only one jet left. The time would therefore come, probably sometime next year, when it would wander a bit and would no longer be reliable. It would therefore probably not be usable for the Olympic Games next year.

This was followed in January 1967 by INTELSAT II (Lani Bird) which weighs about 150 lbs and is located over the Pacific area. The power of this is 18 watts and it is expected to have a life of about 3 years. It was followed by another satellite of the same type in March 1967, located over the Atlantic, which was now being tested for television and would probably be used for transmissions of the Olympic Games next October.

Next year, but possibly not in time for the Olympic Games, it was proposed to launch four INTELSAT III satellites. These would weigh about 250 lbs each and were expected to have a life of five years. The transmissions would have an e.r.p. of about 200 watts and each would have a capacity of 1500 telephone circuits.

In a few years' time there would be considerably bigger satellites and a group to be known as INTELSAT IV would have a capacity of 10,000 telephone channels.

We had been working on the 4 and 6 mHz frequency bands for these circuits, but they were all getting crowded and we were likely to go up into the 18 and 36 mHz bands.

The receiving stations in Europe for these satellites were at Goonhilly, at Pleumeur Bodou in France, at Raisting in Germany and, more recently, at Fucino in Italy. These stations worked on a three week schedule; one week on duty, one week standby and one week on maintenance. A number of others were being built, and one at Buitrago in Spain would be opened shortly.

Satellite communication is an expensive business and as D.G. had already mentioned, there had been a great battle to try and bring down the cost for the broadcast use of satellites. The minimum charge for a period of 10 minutes was still between £1,000 and £2,000, plus so much per minute after that. The communications satellite system was handled by the Post Office Administrations.

Television Programme Distribution by Satellite.

A number of different propositions had been put forward in the United States, the broadcasters thinking it would be a good thing to handle a distribution system by a dedicated satellite. The Hughes Aircraft Company had put up a proposition for A.B.C.; R.C.A. had put up one for N.B.C. and the Ford Foundation had put up a rather bigger one, which was a network on a national basis.

The Canadians had a tremendous scheme under consideration as a dedicated system. They have a big problem with about five hours difference in time between one side of Canada and the other and the C.B.C. proposal, of which there are not precise details, was to use a delayed double-hop path. A broadcast from one of the three centres, Toronto, Montreal or Vancouver would be received and recorded at a limited number of other centres and subsequently redistributed by satellite after suitable delays for each area and rebroadcast by local transmitters. This was a fantastic project which would cost an enormous sum of money, but the Canadians still thought that it would be comparable with the charges which were made for running links. D.D.E. doubted whether the Canadian broadcasting people would succeed in persuading their Government to give them financial support and so enable them to under-cut the Canadian Post Office.

In the United States, in spite of all the proposals which had been put forward, only two were seriously under consideration. One of these was the COMSAT proposal entailing four satellites in use by 1970 and five by 1973, each handling about 16 television channels in addition to a large number of telephony channels. From a capital point of view, these projects ran into the $100M area, but were feasible from a technical point of view.

In Europe the French were proposing to build a multi-purpose satellite known as SAROS II for dealing with broadcasting and telephone circuits between France and French-speaking regions in Africa and Latin America, and they were also negotiating with the Germans regarding a two-satellite system known as Symphonie. There was also talk of a special satellite for "Mon General" to speak to the people whom he regards as his countrymen who happened to be unfortunate enough to live in Quebec!

Another scheme in Europe was the ELDO/ESRO project in which great interest was being taken by the European Broadcasting Union. ESRO were keen to have experience of satellites and ELDO wanted nothing better than to be allowed to launch a few test satellites. The broadcasters would like to take advantage of this in order to provide practical tests, but the U.K. Post Office and Estimates Committee had been discouraging about the project. If the proposition did come to fruition, it would be a very good replacement for the permanent network now used for Eurovision. The ELDO international is estimated to cost about $9M, as against the $3½M for the U.S. launcher. Such a programme distribution system was perfectly practical and would probably be used in the United States in the relatively near future, but it was not certain how far it could be used in Europe.

Direct Broadcasting by Satellite

Here the major problem is availability of frequencies. For radio broadcasting there had been suggestions of using the higher frequencies in the short-wave band, 21 or 26 mHz, because they would penetrate the ionosphere and would give a reasonable coverage. There were, however, relatively few channels available and if a strong signal was received from a satellite, this could blot out this frequency over a third of the globe. Similarly, terrestrial transmitters could interfere with the signal from the satellite. What was really needed was an international agreement to clear frequencies for use by satellites in either the short-wave band or in Band II. But direct broadcasting by satellite is technically feasible and we might see it in somewhere like the United States in the not too distant future.

Two big projects about which no decision had yet been made have been studied in the United States. These were dedicated satellites of huge powers, specifically for direct broadcasting. The projects had been worked out for Band III and UHF, with powers of about 10 kW to give a reasonable signal. In Europe we thought we would not get allocations on these frequencies and would have to go up to the 11 Gc/s range in order to permit enough power to use a domestic receiver with a converter in conjunction with a 4 ft. dish. Even

then the dish would require a clear view of the satellite and not everyone could put quite a large dish on their roof with an unobstructed view at an angle of 30°. If such a system came into operation in this country, it would have to be aided considerably by communal aerial systems. This would be quite expensive for the average viewer and the quality would be poor compared with the best television by terrestrial transmission, because of limitations of power and signal-to-noise.

In conclusion, D.D.E. said he thought it was very doubtful whether direct broadcasting by satellite would be practical in the United Kingdom because it was bound to be supplementary and would therefore be an additional cost. When the time came for a final changeover from VHF 405 to VHF 625, there would be some hard thinking as to whether we were right to be doing this job as planned, or whether it would be better to put our two extra channels, to make up the total of six, on to satellites. But that was quite a long way off and no doubt conditions would have changed a lot by then.

THE AUTOMATIC CONTROL OF SOUND by Mr. D.E.L. Shorter

The possibility of achieving automatic control of the signal level from a microphone and so dispensing with the services of a human operator had engaged the attention of broadcasting engineers for a very long time - in fact, since the days of Captain Round, Marconi House and Savoy Hill and the idea had never been abandoned. Of course we could not replace the intelligence of a human operator, but it was natural to ask whether we could not make some kind of a device which would do the job well enough most of the time. But human nature being what it was, customers would be bound to complain on those occasions when it did the job badly and were unlikely to be consoled by the fact that it did not happen very often. In aesthetic matters you did not work on averages - the weather might be fine on average, but if it rained you still got wet! In practice, therefore, we had to restrict the use of automatic devices to those jobs which they could do without ever making an obvious mistake.

Much of the expertise of a human operator lay in his ability to take anticipatory action, a typical case being when he knew that a sudden increase in level was coming and could fade down in advance gradually, so as to avoid a sudden and very noticeable change in gain at the last moment. To achieve the same effect by an automatic device would need advance warning of the event for a period of seconds, perhaps even tens of seconds and to provide delays of this order would be prohibitively expensive in the present state of technology. For the present it was necessary to confine ourselves to cases in which gain adjustments could be made, at least as far as the ear was concerned, at the moment that they were needed and not before.

The next point to consider was the control of a programme. To do this properly a human operator must not only keep the signal level between prescribed upper and lower limits, but within these limits he must set the level at his discretion according to the nature of the programme, for example he must know, or make a quick guess, whether the beginning of a piece of music was intended to be quiet or loud. We were still a very long way from being able to make decisions, based on the nature of the programme, automatically.

To give some idea of how far they had got, they had produced a 'box of tricks' which, after a few seconds of programme, would make a fair guess as to whether the signal represented speech or music. To put this into perspective, any BBC Engineer could decide this infallably on the basis of ½ second burst of programme. To distinguish automatically between quiet music and loud music without information about the original sound level would require an expensive store of built-in information covering a vast number of possibilities and would certainly not be a practical proposition at the moment.

Any automatic gain control device had got to increase the gain when the signal level was low and in the process, any background noise, such as ventilation rumbles, studio clock ticks or rustling scripts, was also going to be brought up. A human operator would use his discretion in dealing with such a situation. In fact, because of the noise, the range of gain-control of a straightforward AGC system could not be more than about 12-15 db. Some idea of this could be got by listening at present to the medium waves, where we were getting something like 12-13 db rise in the low signal gain. If one wanted to raise the level of quiet signals any more than that, without raising the noise, then a noise gate had to be provided, as in the case of some compressors. To do this it was arranged that the gain having been raised in the quiet passages of programme, was dropped again in pauses and then the machine had to decide what constituted a pause; this was only possible if the difference in level between the loudest noise and the quietest signal was so great that the 'box of tricks' would never mistake one for the other. The situation could be helped by making the control system act very slowly at the bottom end of the dynamic range. In fact, there was a commercial device which crept up slowly in gain if the signal level stayed low for a long time and then if the music stopped, stayed at maximum gain for about 10 seconds and then went back to normal. But in a dialogue between quiet and loud voices, it would take too long to come up on the quiet voice. In any case these devices were always doomed to failure if a piece of music got quieter and quieter and then died away into inaudibility, because at some stage the device would decide that it was not music any more, therefore it must be noise and would fade it down.

In Research Department in the last couple of years they had been looking at means of improving the performance of limiters used for purely protective purposes, i.e. not attempting to process the signal, but simply doing what would be done by a man if stationed at the transmitter adjusting the level to avoid overloads but not making any short-term changes and restoring everything to normal when the fault which had caused the excessive level had been cleared.

Research Department had constructed an experimental device which had some novel features (Described in Monograph No.70, October 1967). This would make such gain adjustments as were necessary to prevent overload, but did not process the signal. They had been trying out one of these limiters at an unattended speech studio in which only a modest amount of level correction was necessary and the results were quite promising, leading to a decision to instal the limiters in the new local radio stations. Conditions there would be a little more difficult, because the limiters would not only be dealing with speech, but with quite a wide range of programmes. It was too early yet to say how successful the device would be or what further 'tricks' they could introduce in the future.

Two of the special features of this limiter were also applicable to compressors. The primary purpose of a limiter was to stop excessive signals from getting through, but automatic gain circuits necessarily took time to act and so in ordinary limiters, the signal did momentarily overshoot the limit from time to time. The problem was particularly acute in devices used for level control because of the large amount of surplus gain which had to be quickly reduced when a large signal arrived. There was a technique for getting rid of overshoot by putting a delay network ahead of the variable gain stage so that the control system which was branched off ahead of the delay network, could have advance warning of what was coming. The conventional way of doing this was to derive a control system from the input of the system instead of the output, but this could not make the variable gain arrangement self-regulating and it was very difficult to achieve the right shape of input/output curve. From time to time people asked how much does it matter if the signal overshoots momentarily. We used to think that if only we could make a limiter operate fast enough, so that the transmitter was over-modulated for only a very short time, then no distortion would be heard. However, we found in our experiments that the very act of changing gain very quickly in itself produced enough distortion to be audible on a high quality reproducing system.

This was overcome by a device (shown on a slide) using duplicated variable gain amplifiers; the first fed directly with input and controlled by a servo loop on the output. The second fed through a delay network and controlled by the bias signal from the first fed through a step shaping, or low pass, network, thus forming a limiter circuit with signal delay ahead of the variable gain network and retaining servo action.

The next thing to consider was gain recovery, which was crucial in any attempt to achieve automatic gain control without producing any unpleasant effects. If the recovery time was very short, say $\frac{1}{4}$ second or less, then in a speech programme the gain would vary from word to word or ever from syllable to syllable. Under favourable conditions, this rapid fluctuation of gain did surprisingly little harm to speech, but it did bring up background noise, breathing, etc. If the programme included some kind of background, e.g. crowd noises behind a commentary, then the level of the background followed fluctuations in gain and went up and down in a rather objectionable fashion. There were also unpleasant effects on music. If, on the other hand, to avoid the effects of rapidly fluctuating gain, we made our recovery time very long, then some momentary signal peak could suddenly knock the programme level down and keep it down for a long time, which was not a practical proposition. In an attempt to reconcile these conflicting requirements, Research Department had arranged the new limiter to keep the recovery time very long, about 10 seconds, for as long as the signal level was high. When the output level fell below a certain figure the device went over automatically to a recovery time of about $\frac{3}{4}$ second. Provision had also been made for part of the gain to recover quickly even at high levels, if one got a very short peak. This dealt with spitty sibilance, etc.

Mr. Shorter illustrated this with a recording on which each of the test passages was played three times - firstly straight, then through an old-fashioned type limiter having a fixed return time of about $\frac{1}{2}$ second and then through an experimental limiter incorporating the refinements which he had just described. Both the limiters were operated with a maximum gain reduction, i.e. in loud passages of about 15 to 16 db. This setting would not produce a satisfactory reproduction, but was used to illustrate the fault. In the case of the experimental limiter, the change in recovery time constant took place in the recording at 15 db below maximum output.

The first demonstration was a piano excerpt. When played through the old-fashioned limiter, having a $\frac{1}{2}$ second recovery time, the natural die-away of the notes was upset, but with the level dependent time constant this defect was avoided.

The second test passage was a news reading, which was recorded and then re-recorded with a key attenuator of 15 db switched in and out at intervals, giving jumps in level. With the $\frac{1}{2}$ second recovery time, this big change in level could be corrected, but the quality was somewhat rough when driving the limiter very hard. The level dependent recovery time was free from most of the short-term gain fluctuations, so that the speech quality was normal; it was a little slower in correcting a large drop in level, but was still as fast as any human operator. It did not quite compensate the whole of the difference in level, but if the programme consisted of two different voices it was debatable whether this would in any case be desirable.

The third demonstration was of symphonic music and illustrated some of the difficulties encountered in trying to dispense with human understanding. With the fixed $\frac{1}{2}$ second recovery time, some of the instruments modulated the level of the others, also the reverberation was exaggerated. This was particularly noticeable in places where there was a loud chord followed by a rest. With the level dependent recovery time, it had been possible to preserve natural reverberation.

To sum up the situation on automatic sound control - at the cost of over-simplification - if the level range to be covered was small enough, almost any A.G.C. device would do the job, but if the range was too large there was no practical amount of technical sophistication which could avoid the occasional disastrous failure. It was necessary to do everything possible to narrow down the range in advance by some sort of coarse control, leaving the A.G.C. device to look after the smaller fluctuations, e.g. an unattended studio might have a pre-set gain control marked with microphone distance in feet. This would make no more demands on non-technical personnel than, say, the use of a flash-gun in photography. In some cases the practice of a talker giving a preliminary level test could be retained. This could be mechanical - a man would press a key and would be told by means of a notice, "when the light comes up, keep on talking until the light goes out". This could be made to determine the mean level and to switch in an appropriate attenuation which would remain fixed for the remainder of the performance, so that the automatic device would only have to look after the small fluctuations.

Mr. Graham, E.i.C. Services, Northern Ireland, asked if Mr. Shorter would comment on the present practice of using compressor limiters in the light music output.

Mr. Shorter thought this was quite different to replacing the functions of a human operator. This was a case where, perhaps by accident, we had produced an effect which could not have been produced by a man. At one time we would not have expected anyone to want such an effect, but it had now become part of the programme. It was an aesthetic matter on which the engineer could not comment. It was done at the source and was part of the artistic presentation of the programme. Therefore the means employed to do it were not in the same category as those which had just been considered, where a programme had only to be restricted in the dynamic range for technical reasons in such a way as to make the operation of the engineer as unobstrusive as possible.

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D.D.E. thanked Mr. Shorter very much for a most interesting talk. It had shown how successful Research Department had been without achieving the impossible and had proved that you just could not replace a human operator by mechanical means when aesthetic problems were involved.

LOCAL MANAGEMENT - Panel Chaired by A.D.E. with Mr. T.H. Bridgewater (C.E.Tel.), Mr. J.E.F. Voss (C.E. Admin.) and Mr. D.E. Creasey (H.E.E.D.)

A.D.E. said that when the title for this item was decided, he had in mind simply to remind those present of a few good principles of local management and then throw the meeting open to discussion, so that they might raise any particular problems, with the idea of achieving the aim of every E.i.C. - an efficient and contented station. They could still do this, but obviously the topic of the moment and the one from which he thought they might learn some practical lessons was the current dispute at Television Centre.

This, on the surface, was a grading claim by the ABS for five categories of staff, namely Technical Managers I, Studio Engineers and Senior Cameramen, together with on the O.B. side Engineering Managers Grade B-, Vision Control and also Maintenance Engineers.

This dispute had been boiling up for some time, but the most important recent dates were, firstly, May 1st of this year when the ABS, after a protracted series of negotiations, cancelled the compulsory Arbitration Agreement,

to which both the BBC and the ABS had been signatories for many years. Under this agreement all grading disputes, which could not be solved by normal bargaining, were taken to a form of arbitration in which both sides bound themselves to accept the arbitration award.

Secondly, in July when the ABS demanded an answer - meaning "yes" - to their grading claims in respect of the above five categories - claims which they said were long outstanding and on which they insisted on an answer by the end of August. They got their answer, which was negative, after which, despite many attempts to persuade them to go to arbitration, they began to introduce restrictive practices in mid-September. Initially the restrictive practices were mild and not particularly embarrassing to Management.

After two weeks the ABS introduced two further restrictive practices - one a ban on overtime and the other involving cameramen working to what was described as their 1958 Job Description - 1958 being the date of the last Arbitration Award for cameramen, an award which the ABS won. In fact the cameramen worked to a series of restrictive practices which even in 1938, let alone 1958, would have had them transferred to dolly pushing overnight. These restrictions were damaging to our output, since some rough camerawork was visible on live productions and even more damaging were the delays in recording sessions, which meant that several recordings were not completed and additional recording or filming had to be arranged at another date. The form of the restrictive practices adopted by cameramen also had the unplanned effect of fraying the tempers of producers, directors and artists in the studio and whereas at the beginning of the dispute there was considerable sympathy for the cameramen, by the end, most people were against them.

The claims by the ABS for upgrading of the five categories of staff mentioned earlier had been examined very thoroughly by O.M.G.D. in consultation with E.Division and had been rejected. In the past, such cases would automatically have gone to arbitration, on the understanding that both sides would accept the arbitration award. However, the ABS appeared to have lost confidence in the old arbitration agreement and, in spite of repeated recommendations by D.A., had refused to allow these claims to go to arbitration, taking instead the action already described.

When this occurred, Management took a number of steps in an attempt to contain and minimise the effects of the dispute. D.A. had issued several notices and had addressed three meetings of staff, at all times emphasising the importance which the BBC attached to the grading structure and the impossibility of agreeing to upgradings as a result of industrial action. The BBC tried hard to be as accurate as possible in its grading assessments, taking into account the views of local management and staff, as well as those of the ABS. If such grading assessments were then altered as a result of industrial pressure, all staff elsewhere in the Corporation at the same grade would be fully entitled to expect also to be upgraded and the BBC felt strongly that the only correct method of disputing a grading assessment was by reference to an entirely independent body of arbitrators, assessors, or the like.

In the past, when such an independent body had decided that the Corporation assessment was wrong and the posts concerned had been re-graded, staff generally had accepted this and had not felt that they themselves should be upgraded. In other words reasonable faith had been maintained in the grading system. This would not be the case if staff were re-graded simply as a result of industrial pressure.

The BBC felt therefore that it could not in any circumstances yield to the pressures brought by the ABS and this was said both by D.A. at three separate meetings with staff and also by D.G. to the Chairman, Officers and senior members of the Union.

In addition to D.A.'s meetings with the staff concerned, A.D.E. said that he, C.E.Tel. and the Heads of Engineering in Television had also held meetings. He could not remember when there had been so much talking, but at all times Management had emphasised our willingness to go to arbitration in one form or another and the wrongness of trying to settle the dispute by industrial action.

Throughout the dispute no kind of restrictive practice was employed by any of the staff at the Acton O.B. base and the Engineering Managers, in particular, were obviously embarrassed by the whole business.

After about two weeks, when there was no sign of the ABS being willing to go to arbitration, D.A. had taken the problem to the Chief Conciliation Officer at the Ministry of Labour who, after hearing our case, had invited the ABS to meet him. After they had stated their case, he sent for us again and in this way, meeting first one side and then the other, he had tried to find some common ground. His view of the common ground, which was also the BBC view, was that we should try hard to get the ABS off the monochrome claim and to talk about grades in respect of colour duties. However, in spite of the best endeavours of the Conciliation Officer, the ABS were not disposed to be diverted from their monochrome claims and obviously they felt that if they could achieve some upgradings in monochrome, there might be even more upgradings later as we moved into colour.

On the previous Friday the ABS Officers had met their National Executive Officers and although it was not known exactly what happened at this meeting, it was known that there was considerable pressure for a return to normal working by some members of the N.E.C., no doubt due to some extent to the enormous effort Management had devoted to explaining our side of the story and to putting our views to as many staff as possible; this was a lesson to be learnt for the future.

Two days ago, for the first time, a joint meeting had been held at the Ministry of Labour, under the chairmanship of the Conciliation Officer, and the ABS had then proposed that the dispute should be referred to an ad hoc board of assessors. This differed from an arbitration tribunal only in that the board was advisory, in other words its findings need not be accepted by either side, but obviously there was considerable moral pressure on both sides to accept the advice of the board. Procedurally there was no difference between this board and an arbitration tribunal. Three members would be appointed from an appropriate list held by the Ministry of Labour, they would begin work almost at once and it was hoped that they would report within about two months.

So much, therefore for the history of the dispute. In a case like this, it was important to try to establish why such a situation had arisen. The BBC had been enormously fortunate in the past in avoiding industrial action but we were now operating in a different environment. There was now no compulsory arbitration agreement with the ABS and at any time in the future they could mount similar or other kinds of industrial action. It was the business of Management to make sure that this did not happen.

It had been suggested by the ABS that the grading claims were merely the excuse for the industrial action and that there other underlying causes. They had given Management a list of about ten, including such things as the present E.D.P. regulations and the terms under which certain grading claims had been rejected. This latter point was one which certainly would need to be handled better in future and when claims were rejected, considerable care should be taken to explain to staff exactly why a particular claim had been turned down.

D.A. had set up a three-man group to investigate these alleged underlying causes of the dispute and to report to D.E., D.Tel. and himself within a month. Since these possible underlying causes were still being investigated, A.D.E. felt it would be wrong for him to attempt to draw any positive conclusions,

but he thought that one or two points were sufficiently clear and sufficiently obvious to mention at this meeting.

The first and most important was the long time taken to deal with some of the claims. It had taken three years before one claim was rejected and although during that time there had been investigations and discussions with the ABS, three years was a long time for staff to go without an answer. Another point was that management had been anxious to reorganise the crew structure in Television, but the ABS had refused to discuss the new crew structure until the grading issues were settled. A vicious circle had thus been built up. There was no doubt that in future claims must be dealt with more expeditiously and we must also be quite firm about organisational plans - consulting the ABS before implementing them, but eventually going ahead with them, even if the ABS objected. Dealing with the ABS was rather like dealing with O.M.G.D.; there were two important parallels. O.M.G.D. was mandatory on grading - the ABS must agree grading proposals. O.M.G.D. was only advisory on organisational matters, the ABS need only be consulted. Management must manage and it could not manage properly without the correct structure.

The other vital lesson from the whole problem was the need for regular communication with staff. Management could not rely on the ABS putting across a full and complete story. On several occasions during the last two or three years they had objected to our calling meetings with staff on matters under discussion with the ABS. The best way to get round this problem was to have regular meetings with staff under some sort of innocuous title such as "the Es.i.C. monthly meeting". The frequency of such meetings was obviously a matter for individual Es.i.C. to decide but there should be some sort of regular meeting, without an agenda, without minutes, where Es.i.C. should feel free to talk about anything which they felt was relevant either to the technical education or information of their staff or to their welfare. It was important to give the staff ample opportunity at these meetings to ask any questions or to raise any problems which might be bothering them.

A.D.E. said that having imparted the background history of the current dispute, he would now like, as originally intended, to throw the meeting open to discussion.

Mr. I.S. Dinnis, E.i.C. Stagshaw enquired about the reasons behind the rejection by the ABS of the compulsory arbitration agreement and asked if there were any possibility of a new agreement being formulated.

H.E.E.D. said this really went back about seven years when the ABS amended their rules to entitle them to take strike action. This was thought to be at variance with the compulsory Arbitration Agreement which said that, in the event of a breakdown in negotiations on grading matters, the dispute should be settled by compulsory arbitration. Once the ABS amended their rules, this threw doubts on the validity of the agreement. The ABS were themselves unhappy about the arbitration agreement, with particular reference to the actual people who composed the tribunal. This led to a very prolonged series of discussions with the Corporation, which culminated in the abandonment by the ABS earlier this year of the compulsory arbitration agreement. The Corporation attitude was quite definitely that there should be an arbitration agreement, as this was the obvious and sensible way of settling these sort of problems and efforts would continue to try and re-establish some sort of agreement. The main difficulty was the ABS insistence that they must retain the right to take strike action and it remained to be seen whether or not this could be made compatible with some sort of arbitration agreement.

Mr. I.S. Dinnis said that it seemed from notices which had appeared, that the ABS's main objection was that they had not been allowed to choose somebody outside their own membership as the third party in an arbitration tribunal. Would H.E.E.D. care to comment on this.

H.E.E.D. agreed that this was a main objection - the old Arbitration Agreement provided for a Chairman of the Tribunal nominated by the Ministry of Labour, together with two members of BBC staff, one nominated by the ABS and one nominated by the BBC. The ABS felt that they should not be compelled to nominate a member of BBC staff, but should be entitled to nominate, for example, an eminent official from another Union. He did not think that this was a great point of difficulty, but it was one which would have to be settled before any new agreement could be drawn up.

Mr. H. Henderson, H.E.T.D. asked what was the current situation on the T.A. Progression proposal. This had in fact been in operation since September 1965, but nothing had been promulgated because of difficulties with the ABS.

C.E. Admin. said the situation was that we had not yet had final clearance about the introduction of the revised proposal which, in essence, would untie the progression of T.As. from the compulsory taking of the Grade C course. We felt we wanted to introduce this freedom for a T.A. to make progress at his "natural rate" rather than be forced to take the Grade C course within a given time. We had unfortunately met with certain objections from the Union side, most of which had been met and we were now awaiting final clearance. It was hoped to go ahead on this very shortly.

Mr. L. Richardson, E.i.C. Bush House. Would H.E.E.D. care to say something about the Sound Operations review.

H.E.E.D. The actual situation so far as the Division was concerned was that the redundancy problem, which at one time it was thought would be a major difficulty, had shrunk to almost nil. The actual transfer of duties was now in hand, but what had not yet been settled and was likely to present difficulties was consultation with the ABS about the establishments which would remain in Engineering Division. At London station they were querying certain reductions in staff which had come about primarily because of a revised shift rota and at Bush House they were querying very strongly the need for an all-Engineer establishment.

Mr. L. Richardson felt there was a limit to the amount of information which local management could give whilst negotiations were going on and this tended to give an impression of lack of communication between staff and local management. He felt this should be avoided and that it should be possible to keep staff informed throughout the exercise and not just at the end of it.

H.E.E.D. agreed that there should be communication and would like to think that local managers would call on his department for information if there were to be meetings with staff. He would be very willing for members of his department to attend such meetings and recalled that at Bush House, members of E.E.D. and O.M.G.D. had attended meetings with staff, which had helped to get things going well.

A.D.E. agreed that if it were felt that the support of E.E.D. at such meetings would be helpful, then this should be arranged.

Mr. J. Jarvie, E.i.C. Operations, N.I. felt difficulties arose through variations in the interpretation of various rules and regulations in regard to staff as between one Region and another and as between London and the Regions. He felt more guidance in these matters was required between top management and local management.

H.E.E.D. entirely supported this view and hoped that Es.i.C. would contact their appropriate Establishment Officer and ask for interpretation of rules and regulations. The Union was always quick to seize on any difference in interpretation and to play one station off against another, so he would urge Es.i.C. to contact E.E.D. in any cases of doubt.

Mr. R. de B. McCullough (H.E.Tel. Services) Following on the previous question, said difficulties had arisen when E.E.D. had given one interpretation, the local branch of the Union had contested this, had raised the matter nationally and an entirely different interpretation had been given by Staff Administration. Another difficulty which he had experienced had been the shuffling which had gone on between Organisation and Grading, thus providing the ABS with the opportunity, merely by putting up six or seven claims at one time, of completely swamping the O.M.G. structure of the BBC. In his opinion this was one of the basic causes of the present dispute in Television.

A.D.E. thanked Mr. McCullough for making this point and said it was why, in his opening remarks, he had quite deliberately bracketed O.M.G.D. and the ABS together. Management had got to separate grading matters from organisational matters to make sure that the one was not confused with the other. He asked C.E.Tel. if he would care to add anything to this.

Mr. T.H. Bridgewater (C.E.Tel.) was very conscious of the problem of believing in O.M.G.D. and conveying our beliefs convincingly to our staff. This had come out very clearly in some of D.A.'s recent meetings with staff, when one question had been as to how good were the O.M.G.D. investigators, had they ever been in Tel.Tech.Ops. and did they really understand Tech. Ops. D.A. had defended O.M.G.D. by saying it was important that the investigators should be impartial and should be able to measure grading throughout the Corporation against a common yardstick. This was good in theory and might be correct in practice, but unless one could convey to staff that this was a good and right thing and that O.M.G.D. were nearly infallible, then there would always be troubles. He felt it was very important for local managers to get closer to O.M.G.D. and to believe in what O.M.G.D. were saying in order to convince individual members of staff that what management was proposing to do was, in fact, the right thing.

He did not know what the answer to all this was, but he felt it was a question we had to have before us the whole time, because as managers we had got to go along with what O.M.G.D. were saying. If a decision were made and upheld by the Corporation then everybody from the top right through the Management train had got to be telling the staff below "yes of course this is right, we have been involved in this consultation and we feel it is correct". The necessity for getting closer to O.M.G.D., identifying oneself as managers with O.M.G.D., and putting over to staff what O.M.G.D. had decided was right was an extremely difficult thing, but obviously in the course of investigations of grades by O.M.G.D., Es.i.C. had got to be involved and consulted and their opinions must be listened to, perhaps more in the future than had been done in the past. In general what he was saying was that the O.M.G.D. image was not good enough and had never been very good in the eyes of staff, but if it were to be preserved, then somehow we had got to put the image over to the staff. It might be that O.M.G.D. would not survive, but whilst we had nothing else as a means of deciding some vital questions, it had to be supported.

Mr. G.W. Morris, E.i.C. Services South and West, asked to what extent was it felt that the recent dispute had been brought on by the obvious success of the E.T.U.and N.A.T.K.E. whenever they had raised an issue. He thought this had to some extent spurred on the ABS to act as they had done recently.

A.D.E. said this was a view which had often been expressed by the ABS and a view with which he had a good deal of sympathy. It was true that when a Union came out on strike, it got more attention than if it just wrote a polite memo. This was akin to the point which C.E.Tel. had made about the need for local management to be tougher in trying to put over its views to higher management. Of course, tactically the ABS were in a much stronger position now that they had not got an Arbitration Agreement.

Certainly one of the underlying causes of the recent dispute was the large "take home" pay of some of the manual staff who work in studios.

Closing the discussion, A.D.E. regretted that there was not more time available. He would just leave them with the thought that Es.i.C. should talk to staff as often as possible, should have regular meetings with them at which they were free to talk about anything. They should worry Chief Engineers and H.E.E.D. for information and should make sure that when senior members of Management visited a station, they stayed long enough to talk to staff. When the present dispute was tidied up, it might be possible to give a more detailed and more informative report.

This concluded the formal business of the Meeting.

GG/DM/HD
December 1967.