Prewar, all installations had been designed as 'individual' installations; each desk, each apparatus bay, had been drawn out very carefully with all its details, such as tag numbers, design etc. Every studio was different; there were no thoughts in prewar days of what we now know as standardization; this word had never been mentioned at all. But when we came to do work in wartime, it was essential that some form of standardization should be carried out because plans were not known sufficiently long beforehand, and a large amount of equipment was required in a very short time; when I came back to London, I introduced many of the ideas which we had discussed (Messrs. Purslow, Patrick, Holmes and myself) in doing the Wood Norton installation - the kind of thing similar to the use of multicore cable - I introduced a lot of these ideas ~~xx~~ into the equipment which was required for the P.R. building. As an example of this, whereas prewar cubicle/desks had been 'architecturally' designed; they had even had 'architecturally' designed mixers - I am thinking of the physical appearance of the mixers, not the technical details (they were of course only potentiometers). At Wood Norton we had very successfully used office tables, and when I came to do the design work for the P.R. building, where we had half a dozen or so studios, I based the studio desks on the use of ordinary office tables boxed in at the back and ends with plywood and having standing on them a standard OBA/8 amplifier, a small five-way key-switch unit and a standrad MX/18 mixer, which was the mixer that went with the OBA/8, tilted on a piece of wood to contain cue keys under the front panel; we had the tilt and the space for the cue keys by doing it this way. These were wired down to a very elementary terminal block and we used that form of aerial/earth porcelain-based copper knife-switch which, in those days, all domestic installations had in order to short the aerial to earth in the case of a thunderstorm, inside the desk to terminate an emergency line to the control room so that you could switch the microphone directly through to the control room on the 'belt-and-braces' principle - at the direction of Mr. Wynn.

As well as the desks in the cubicles, we also devised some ~~xx~~ standard apparatus bays. These were, as far as I can remember, a control position bay having the main APM (rack-mounted version of the OBA/8), a row of 20 studio signalling keys, a small telephone communication panel, a programme meter panel and, I think, trapvalve panels at the top - ~~this was a control position bay~~. We had a trapvalve bay and a jacjfield bay.

The jackfield bay, for instance was wired with rows of jacks wired in 'Listen/Line' formation, other jacks wired in a 'Listen/Line/Apparatus' formation and yet other jacks wired with one input feeding to ten outputs. All these could be wired up in mutlicore cable in the workshop, could be installed and wired up to a frame and by jumpering on the frame you could use them for all the various purposes for which one needed jacks in a control room. As well as standard bays and standard cubicle desks we also endeavoured to do a drawing of what we termed a typical talks studio suite layout. This showed all the power points, red, white and green lights, buzzers, talks desks, cubicle desks and TD/7 gramophone, the idea being that we could give this, whenever any talks studio was wanted, as information to Building Dept. or Wiring Unit or any outside builder or wiring contractor and get virtually the right answer.

We began the installation of 200 Oxford Street in December 1941 and the service date was May/June 1942, that is, during May and June we were slowly cutting over and bringing the installation into use. I have amongst my records details of all the studios and the control room equipment. The control room and studios were down in the basement, and a great deal of very heavy steel strengthening was done on the floor of the Ground Floor and on the ceiling of the Ground Floor - girder and reinforced concrete work. There was also a considerable amount of concrete work done in the Basement and the Lower Ground Floor to stop flooding and to protect the studios and control room from any enemy device that might fall down the lift-shaft.

There was talk in 1942 of a main scheme at Aldenham. This was to have been a very big building with a ventilation system involving a vast tunnel. There were meetings held between S.E.(S), H.L.D., Mr. Colborn and myself on the requirements for this building - building requirements in particular: accommodation, control room , PBX, general purpose studios. This vast project never came to anything, but I have records of what it was going to involve.

I worked on ~~further~~ extensions at 200 Oxford Street for such things as additional continuity suites, a third mixer, a bigger PAX, a loudspeaker calling system. Aldenham was used as an overseas centre, and we had there two or three studios, recording rooms and reproducing rooms and again a small control room. I had to do a switching scheme there. At that

time, a quarter-hourly switching scheme was introduced, i.e., every quarter of an hour the programme was changed, and the number of programmes and networks was increasin g to such an extent that they could no longer be handled by quick cross-plugging on a jackfield. As we could not easily get any automatic devices like relays or uniselectors (one of the main objects in the design of 200 Oxford Street was to avoid the use of any components that were difficult to obtain, such as relays), we devised a changeover system of two jackfields. You plugged up one jackfield with the networks, so many sources to so many destinations; this was a transmission jackfield, and, during the quarter of an hour that this transmission was taking place, you plugged up on a second jackfield the set-up for the following quarter of an hour and when the clock said 'go', you pressed the button and we managed to find enough relays to do a changeover from one jackfield to the other. Then of course you re-plugged the first jackfield again. This Aldenham switching scheme was begun in January 1943 and went into service on 17/18 May 1943.

I had a variety of jobs at that time, such as additional aerials on the roof of 200 Oxford Street, expansion of PAX, ~~xxxxxxx~~ gramophone desks in rooms, Aldenham transmitters and defence protection, formation of listening room at Aldenham, silencing of the clocks that we obtained during the war, alterations at 4a Ramillies Place, a little studio that was down on the lower floor of what is now Littlewoods (Feb.-Aug. 1943), a fourth set of alterations at 200 Oxford Street (Feb.-Aug. 1943).

Stduio equipment, as far as amplifiers and cubicle equipment were concerned, consisted solely of OBA/8 amplifiers, MX/18 mixers, the usual little key-switch unit, which held a censor key and a talk-back key, and the LSU/4, which was the wartime flat baffle loudspeaker. In ~~1944~~ 1943/4 Mr. Ellis, working for Mr. Colborn, and with assistance from Mr. J. C. Taylor and Mr. R. D. Petrie, had been devising what would be the post-war studio equipment. This had amplifiers in the studio - I'm thinking back now to the prewar B.H. days, when amplifiers were not in the studio, and microphones were wired direct to 'A' amplifiers situated in the control room and the wartime, when we went to OBA/8s and sent at zero level from studio to control room. The type 'A' equioment, which was the first of the post-war equipments that Mr. Ellis was devising, would again ~~xxxx~~ have amplifiers in the studio and send at zero level. ~~xxxxxxxxxxxxx~~ I went to join

Mr. Ellis to turn this equipment from what was virtually first-model equipment into production equipment which could be produced by Equipment Dept. in fairly large quantities for installation in studios after the war. This started in 1943/44 - we were testing new studio apparatus in December 1944. In December 1945 we were talking to Messrs, Mulliners, the coach-builders, who were going to ~~make~~ produce the cabinets for the type 'A' equipment, and in March 1946, when Mulliners were delivering the first production model of this equipment, there was very great difficulty in laying down limits for the cabinet work - this was the first time that the BBC had really used this kind of sheet metalwork for cabinets. In June 1945 there were discussions with Equipment Dept. over the standard studio equipment. The first of the type 'A' equipment went into studio 8A, installed by J. C. Taylor; this was the first model that ~~Designs Dept~~ S.D.I.D. did, not the first production model, and it was handed over to the E.i.C. on 11th December 1944. S.D.I.D. kept a very watchful eye on this, because I see entries in my notes one or two days afterwards, 'Studio equipment tested, all O.K.' - we used to go and test it in the morning to see that it still worked.

On 11th January 1945 there was a discussion with Petrie and Ellis on 19-inch panels and covers - it was then that the Designs Section of S.P.I.D. were introducing 19-inch panels and covers.

Some reference ~~was~~ to uniselectors in the Corporation might be made. Just before the war, Mr. Colborn, Mr. Dos Santos and myself were engaged in doing the new uniselector switching system for the extension to B.H. We had got as far as a mock-up model, in which one could sit at a wooden desk and ~~have~~ plug up things and make the uniselectors whizz round; there wer six unislectors. After the war when these had been lying in Avenue House for six years, they were taken up to the Designs Section and tested for resistance, which we found to be very satisfactory, and they were installed for a trial in 200 Oxford Street and used with one of the continuity suites there; this was while 200 Oxford Street was still doing transmissions. Based on the results of this trial, J. C. Taylor and Mr. Ellis went on and did the Bristol control room and later the Bush House and Broadcasting House extension control rooms.