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LIGHTING SUSPENSIONS

IN THE VERY FIRST ISSUE *of* Sound and Vision broadcasting *R. H. Hammans, Chief Engineer of Granada TV, wrote on the logic of suspending studio lighting units on telescopes from a lighting grid. This provoked an immediate reply from K. R. Ackerman of the BBC stating the alternative advantages of motorized barrel suspensions. In the intervening 4 years both systems have undergone further developments, and, as both systems have their obvious merits for meeting different problems, the Editor felt it would be advantageous that a survey of the whole question of studio lighting should be included in these pages. Two experts in this field very kindly consented to give their time to discuss this problem and the outcome of their talk has been summarized in the following article. Though it is emphasized that both were expressing their own viewpoint they were drawing on their personal experience in the operation of different systems. Both are members of the Stage and Studio Lighting Committee of the National Illumination Committee. These two were Ken Ackerman of the BBC, which largely uses motorized barrel suspension, and Phil Berkeley of ABC Television, whose Teddington Studios use one version of the lighting grid. Other aspects of studio lighting, such as luminaires and control systems, will be dealt with in future articles.*

Editor To start the discussion off I would like to ask Ken Ackerman if he would summarize for us what he considers the advantages of barrel hoists, and also what developments have occurred since this subject was last written about in the first *Sound and Vision broadcasting*.

Ken Ackerman I would briefly like to state that I don't claim that barrel hoists, or as I prefer to call it, the motorized hoist suspension system, is necessarily the answer for everybody. Organizations like the BBC, with their particular staffing structure, the requirement for very rapid studio turn-round and the utilization of staff at night, have found motorized rigging suits them best.

The advantages, as I see them, of barrel hoists are that they can be brought down in groups rapidly to the floor where your staff can easily work on them and that all your electricians are available on the studio floor, and not scattered on gallery or grid. Also, the barrels form a store for all the luminaires you need in a studio, and rigging is really a matter of moving lamps a few feet from one bar to another as required. We claim that the job can be done quickly, between the time that the scenery of yesterday's show is removed and tomorrow's is erected. This requires high standards of pre-planning. I would agree that the longer 8-ft bars used in some of the older studios have their limitations if there is much change in the pre-planned programme.

Editor Is this why you have shorter bars now?

Ken Ackerman Well, for two reasons. One is that they are more readily lowered to the floor even when scenery is there, and the other so that they give greater flexibility in positioning and height. The bars are now 4-ft long, so that there can be two different heights from hoists occupying the same space.

Editor What about power feeds?

Ken Ackerman This is one of the claimed advantages of the hoist system — that the power is permanently installed on the bar and you have no need to go round finding a socket to plug the lamp into. One small complication is getting the power feed down to the bar. In earlier studios with lower ceiling heights we used self-coiling cable with moulded sockets. In the new Studio 1 at the BBC Television Centre the ceiling height is above the limit where this technique can be used, so we have gone to what we call the 'flip-flop' tray, which folds up in a trough as the hoist goes up. This has the advantage that you can put other cables, such as loudspeaker feeds and monitor feeds on it.

Editor How many actual control circuits are there to a bar?

Ken Ackerman The short ones have three — two

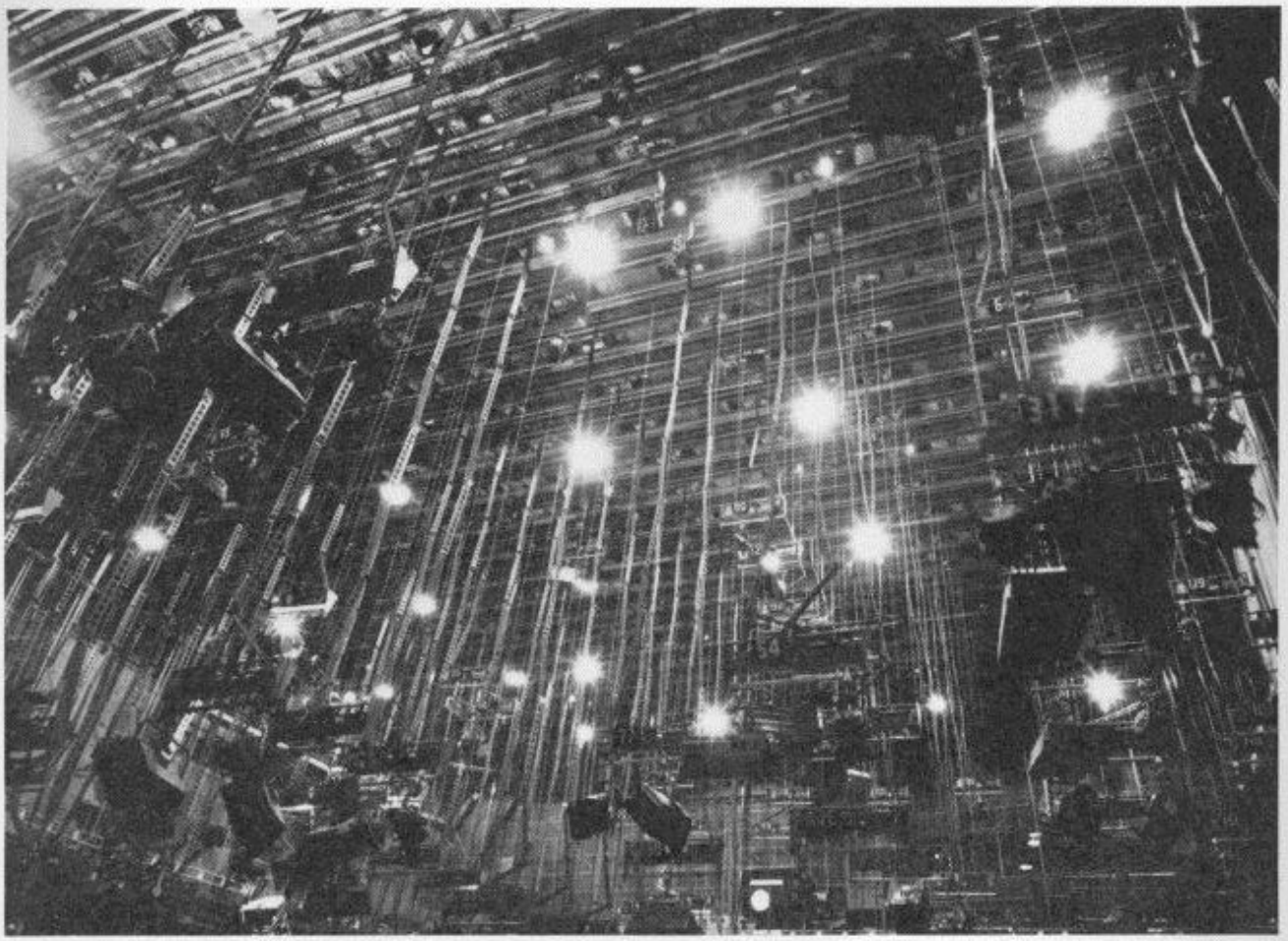

Fig. 1. Studio 1 at the BBC Television Centre with a proportion of the barrels brought down to floor level. The motorized hoists and the 'flip-flop' trays which carry the power feeds and the troughs into which they fold can be seen.

2 kW and one 5 kW. They are not individually controlled, however, but come back to a patch panel. Therefore, you install the number of dimmers you consider the studio requires, which in Studio 1 is 240, and they appear on a patch panel, and can be plugged into outgoing circuits of which there are three per hoist. It is often said that one of the snags of the bar system is that you have to have a patch panel, but we claim it is an advantage in that you can arrange dimmer faders so that each scene appears at the desk in a convenient group.

Phil Berkeley Ken has said he likes to have his crews down on the floor. We take the reverse view to this. We like to work in parallel with the scenery people. This is because we don't normally set overnight. We are not concerned with trying to get a lot of people into a studio for a short space of time to do a lot of work. We can take a slightly more leisurely approach, purely because of the demands of our production schedule. We use less people over a longer time and the technique

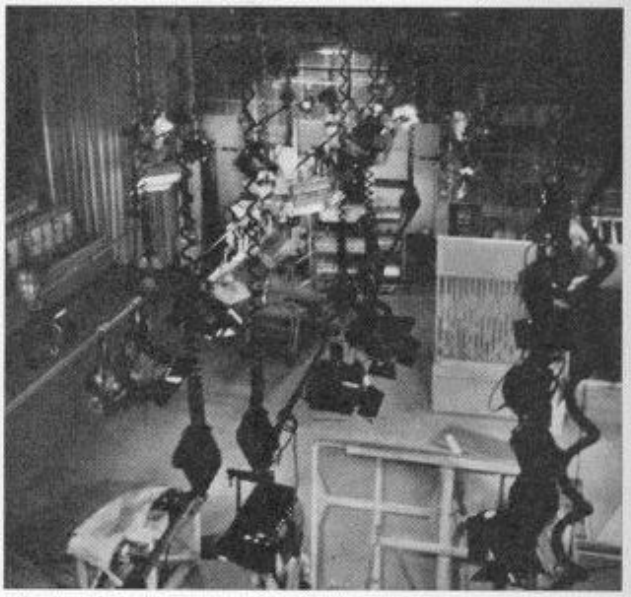

Fig. 2. The longer barrels as used in the earlier BBC Studio showing the self-coiling feeder cables.

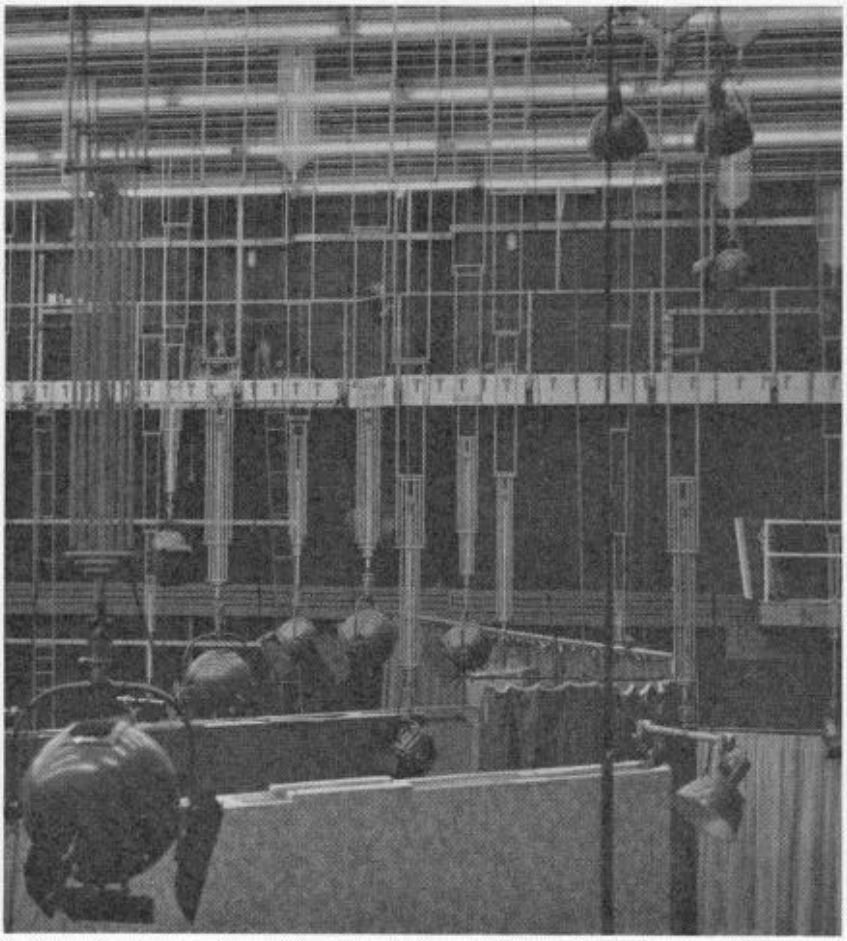

Fig. 4. Studio 1 ABC Television Centre at Teddington showing the telescopes. The loading gallery can be seen below the grid.

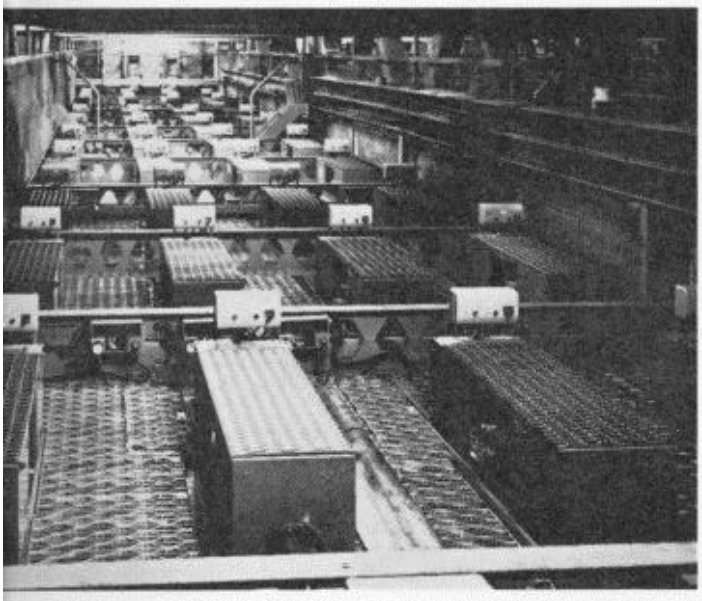

Fig. 3. One of the bays of lighting hoist motors above the lighting grid at the BBC Television Centre.

employed with the telescope system is that our scenery goes in first, and as soon as the first lot has begun to get itself in a stable position, the lighting people, working from the loading bay level, proceed to arrange the lights, and by the time you have finished putting up the scenery you have finished placing all your lights. Of course, this is a longer process than bringing everything down to floor level, altering it and sending it up again, but in the number of man hours it doesn't make an awful lot of difference. Another point is that we can use our telescopes much more flexibly. We put monitors, loudspeakers, microphones, rain bars and sheets for casting shadows on them. We also run cables for the microphone booms from above. Admittedly you have to find a socket for the cable on the grid, but, by the sheer nature of things, you will tend to group them geographically. Lights are grouped into their scene areas by the sheer laziness of the man walking around with a plug looking for a socket to put it in.

There is one small drawback to the telescope system

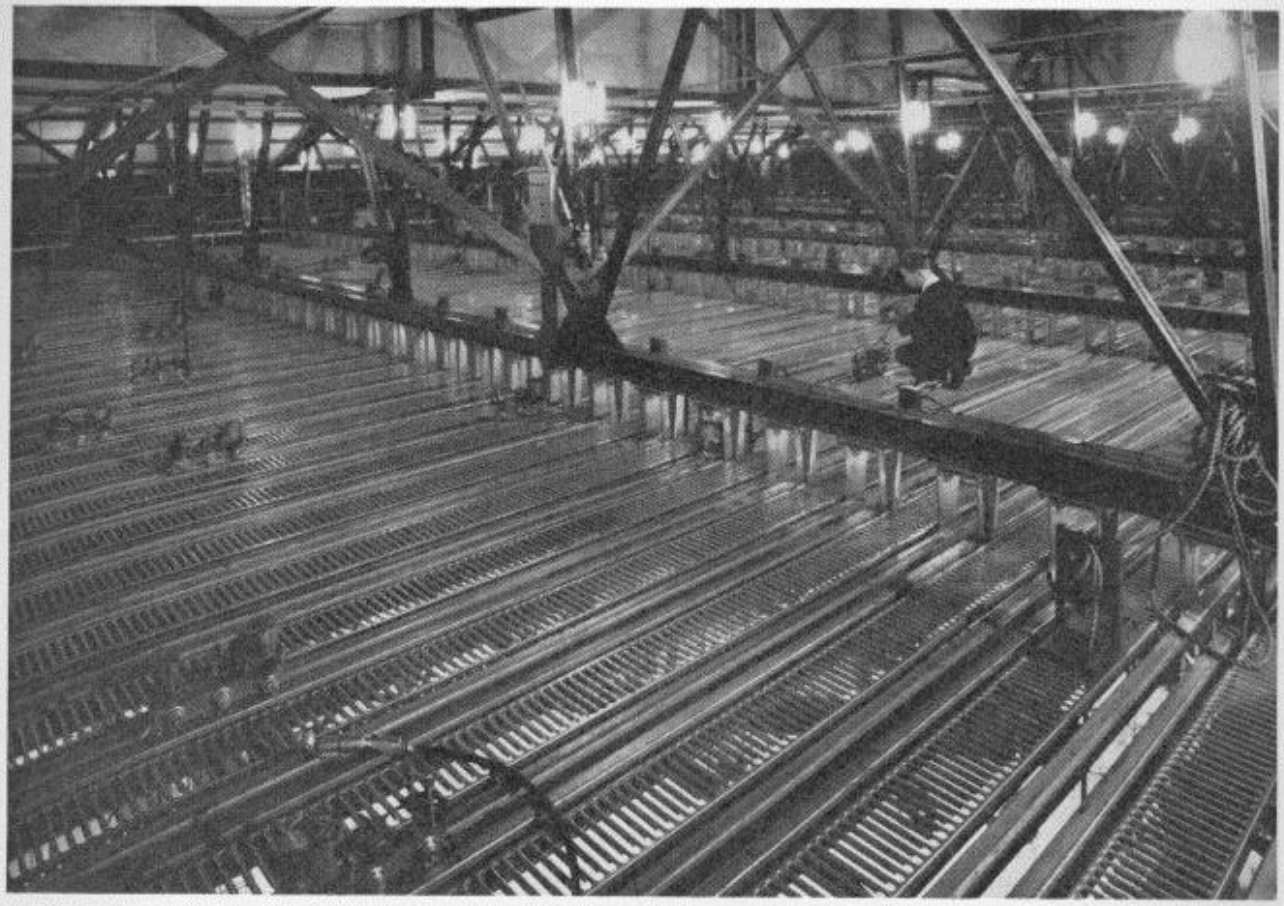

Fig. 5. View of the top of the grid at Teddington. The short hangers from the roof beams make for a rigid structure. Feed points can be seen along the cross beams. The telescope trolleys with pneumatic power tools are also seen.

in that you can't fly scenery in the theatrical sense, but this is not often needed, and can be overcome by rigging blocks and tackles.

I would like to emphasize Ken's earlier remark, there is no right and wrong about this — it depends what you want to do with it, what sort of labour problems you have and what sort of turn-round time you have. The main claim I would make is that the telescope system is possibly more flexible in that you can do rather more with it without extra capital expenditure.

Ken Ackerman We would, of course, also like to be able to rig lighting at the same time as scenery—we are always trying to keep the unproductive hours in the studio to a minimum. But we have a strong dislike of people working over people, and this is another factor which is keeping us from using systems of overhead rigging.

As far as scenery suspension goes, the pattern of motorized lighting hoists does enable one to have a

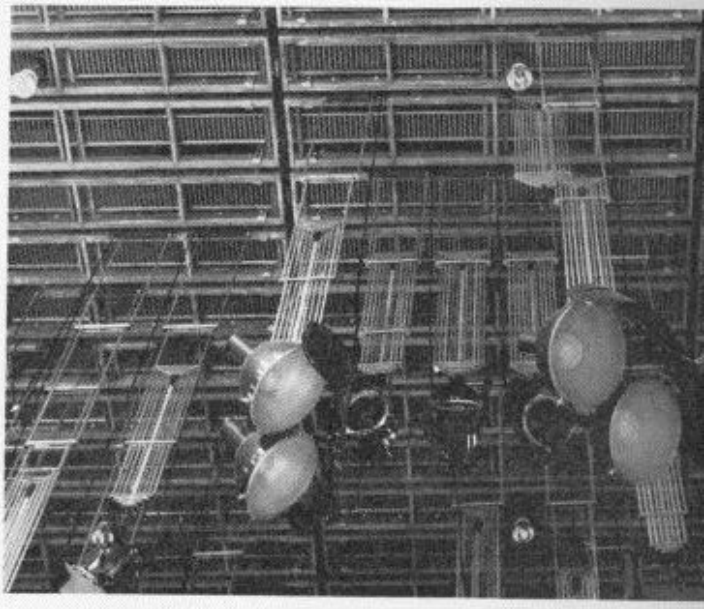

Fig. 6. Looking up at the grid at the ATV studio at Elstree. The transfer tracks can be clearly seen.

Fig. 7. Studio 1 at ABC Television, Teddington, during a variety show. Monitors and feeds for microphone booms can be seen slung from the telescopes.

pattern of scenery hoists between; but I would like to emphasize that the flying function is only secondary — in fact in a number of studios the hoists are a fixed speed and not available for flying. Their first function is the rapid suspension of scenery. Instead of having to go into the grid and drop ropes, you press a button and down comes a hook, which you can use to support a flat or hang a chandelier.

I wouldn't suggest that every studio should be equipped with flying facilities, but if you are an organization with several studios, one or two with this would be providing a useful facility that would be used from time to time.

Editor What scale of staff do you need?

Ken Ackerman A chargehand and three is the normal complement but they also do a certain amount of front-line maintenance.

Phil Berkeley Well, ours is a bit more difficult to sort out, because we are running people between studios, but at most there are two on the grid, two on the gallery and the lighting supervisor on the floor with a chargehand in attendance, but this can vary with the time available and the complexity of the problem. I should think that capital expenditure is by no means the same between the two systems. Speaking from memory, ours runs out at about £10 a square foot for everything — grid, luminaires, suspensions and the control system. Your system must be more than that.

Ken Ackerman I would accept that. The comparison done at the time of Mr Hammans' article, which showed a similar capital cost, was on the basis of the lighting system only, and did not include the scenery suspension system. The introduction of shorter bars also has an appreciable effect on increasing the capital cost.

Editor What are the differences in methods of raising and lowering luminaires?

Ken Ackerman The bars are electrically hoisted in all our London Studios. A few smaller short-life studios have had manually hoisted bars, which must be about

the cheapest form of grid system apart from a pure scaffold grid.

Phil Berkeley There are various ways of raising and lowering telescopes but none of them have a built-in system. You plug in some form of pneumatic or electric tool. We have found that electric tools have rather a short life and a gay one, and so we have gone over to compressed-air tools. There is usually a compressed-air supply in the studio and it is not difficult to extend it up to the grid. You can get hand tools with the equivalent of about half a horse power. They make rather a lot of noise but they are never used during shooting. We have found it desirable not to use them with monitors however, as they don't like being vibrated.

Editor I was just going to ask if you ever operated the hoist on shot.

Ken Ackerman This is done occasionally, but they are rather slow for programme use. It is sometimes done as a gimmick, but I would not say it was an intended facility.

Phil Berkeley We certainly would not dream of moving a telescope by hand or power during a production. In fact I cannot think of such a problem ever having arisen.

Editor Can you tell us briefly what advances and development have been made in the grid system?

Phil Berkeley Since the original Granada one, which was simply a folded metal channel with the telescopes riding on the top, it has been found wiser to make the planks wider so that you can move one set of lights past another. This has meant that you can have a more "transparent" grid, so that you can see what's going on below. Another bright idea was the ability to move at right angles to the main slots, on what are called "transfer tracks". ABC introduced the idea of having a loading gallery level with the bottoms of the telescopes, so that you don't have to lower them to floor level to load the luminaires. Another innovation is the "upside-down grid" where the body of the telescope is above the grid, this makes transferring telescopes much easier, though you need to hang your grid much further from the roof beams and therefore it is not so steady. This is used in one Welsh Studio combined with trap doors which can be used for suspending heavy scenery. A lot of European Studios are going in for telescopes of a single circular or hexagonal section and this gives a much neater arrangement.

Editor Are there any acoustic problems with grids?

Phil Berkeley Well, there's an awful lot of metal up there. We treat the individual rungs of our grids so that they don't produce any diffraction grating effects

Fig. 8. The upside down grid at Television Wales and West. Though this system requires longer hangers from the roof beam, it is a very convenient method. The loading gallery can be seen through the trap doors in the planks.

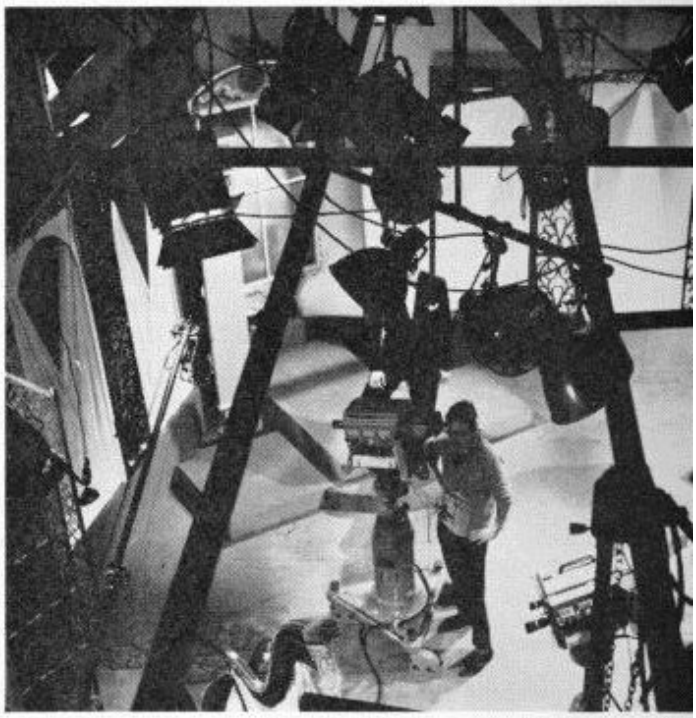

Fig. 9. Ulster TV, where a simple scaffold grid is used.

Fig. 10. A bus-bar suspension system at Shell Centre, London. In this system, power is fed through the suspension bars and the lights are hung on lazy tongs.

and we make the whole as acoustically transparent as possible to low frequencies.

Ken Ackerman Purely fortuitously, we avoided this snag because we happened to go in for a diamond patterned planking!

Editor What about the smaller studios?

Phil Berkeley Well, even the humble scaffold tube grid has had developments. It has been found that a rectangular spacing of about 2 m by 70 cm provides more flexible suspension possibilities than a conventional square grid using the same amount of tubing. A novel innovation for the smaller studio has been the introduction of the sliding bus-bar, either as a method of supply with suspension alongside or as a method of supply plus suspension.

Editor What about the future?

Ken Ackerman I would like to give my opinion where we would eventually like to go in this century in the way of suspension systems. I would like to scotch the idea that we at the BBC are sold on bars for ever more — what we are sold on is the idea of having motorized suspension. If we could have afforded motorized telescopes with motorized trolleys with power permanently fed down to the luminaire, we would have had them, and perhaps one day we might. In other words we would like a motorized telescope with an outlet permanently on it, fed from some bus-bar system and able to be completely remotely controlled from the studio floor. Perhaps it's an extravagant thought but a system controlled by punch cards might even be a possibility.

Editor Is colour going to make any difference?

Ken Ackerman Of course colour is going to call for more light, and this must in turn call for smaller luminaires, particularly 5-kW spotlights. Producers will inevitably want to use colour filters and this will bring in its train many problems. However, I don't see it changing the suspension problem fundamentally, though it will require radical changes in luminaires, and already we are seeing new ideas, such as the "Twister" combined flood and spot and the quartz–iodine lamp, which will have a profound effect on future developments.