

TELEPHOTOGRAPHY AND SPOTLIGHT AS AIDS TO THE STUDY OF ANTIQUITIES.

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FOR the past fifteen years I have been making a survey of sculptures in our cathedrals and churches which are so high up or in such out-of-the-way positions that ordinary photography can hardly be used to portray them. The idea came to me in the quire of Winchester Cathedral one sunny day when I was looking at the magnificent collection of painted bosses that you no doubt have often admired. The idea of using telephoto lenses was not of course new. The bosses in Exeter Cathedral had been photographed in this way but the lenses used had not magnified sufficiently to make the results a real success. I began with a lens that magnified sufficiently but it had the disadvantage that so little light was transmitted that it was not possible to see the image of a roof boss on the ground glass screen. An indirect method of focussing and of pointing the camera at the object had to be adopted. An electric torch was placed on a chair at the same distance away from the camera as the roof was above it. This distance was ascertained with a box sextant. The focussing was of course quite easy. To do the aiming a small telescope was clamped on to the camera, and was so adjusted that when the image of the torch was in the centre of the ground glass screen it was also in the centre of the field of the telescope. With such an arrangement I began the photography of the quire bosses. But with a lens that transmitted so little light the exposures had to be very long. On a bright sunny day in the very light quire of our Cathedral it took twenty minutes to get a good result, on a cloudy day it took an hour, and on a dull day two hours or more. I well remember how I used to come over on a sunny morning and how often clouds came up even before I had begun work. If I had continued with the apparatus I began with I should have photographed a very small number of bosses, for there are many churches whose roofs are so dark that it is nearly impossible to photograph detail except under the very best conditions, and sometimes hardly then. To get over this difficulty I used a lamp, a Daylight Signalling lamp, such as one may see being used between ship and ship, or ship and shore. This sends out a powerful beam of light that enables one to get good negatives in any weather; I became independent of sunshine. Photographs can quite easily be taken at night, and a certain amount of my work has been done at night; I have been alone at night in our own cathedral and also at Canterbury, Gloucester and Westminster Abbey. In the dim light of an electric torch and of my spotlight

they show a solemnity even greater than by day, and I have seen nothing more impressive than the quire of Canterbury with the full moon shining on the tomb of the Black Prince.

But exposures were still long, for my lens worked at a very small aperture. The next improvement therefore was a more up-to-date lens, and I chose a 40in. Dallmeyer telephoto lens which worked at $f/8$ instead of something like $f/48$, thereby reducing the exposure by some thirty times. To take this lens I had a special camera made with various adjustments to facilitate the work it had to do.

Originally I took all my photographs on glass plates, and I had slides that held 48. When these had been used the plates had to be taken out, stored in boxes, and a new set inserted, and as I used panchromatic plates all operations had to be done in the dark; it took a good hour to change. I have been shut up in all sorts of curious dark corners in cathedrals, but I have also had very great kindness shown me by professional photographers in various towns who have let me use their dark rooms. However when I went to Cyprus to photograph for the Cyprus committee I found that the weight of glass plates would be prohibitive, so I had to take to film packs, and for architectural photography I have never used plates again. The whole time of changing plates was done away with, the dark room difficulty was obviated.

I did a great amount of work with this camera, and I still use it in some circumstances. Its drawback is that it is very heavy, and it takes nearly half-an-hour to assemble, and nearly as long to take down and pack up. One thought twice before taking this camera into some church which, like Havant, had only one or two bosses that one wanted to photograph.

I had at first looked on the miniature camera rather as a toy, a camera for taking snapshots and nothing more, but I gradually changed my views, and began seriously to consider the miniature camera. Finally I used a Leica camera with a 400 millimetre lens working at $f/5.6$. In these modern precision lenses one gains nothing in sharpness by stopping down when the object is all on one plane as is the case with roof bosses. The result is that I can get good negatives with an exposure of 10 seconds or less. But this is not the only gain; the apparatus takes only about five minutes to set up, is much lighter to move about, and in other technical ways is a great improvement. The small negative, not much larger than a postage stamp, is capable of enlargement up to 12 by 10 inches or even more.

All these advancements in technique have enabled me to photograph in any weather and have very much speeded up the work. It took me two years to photograph the 97 bosses in the quire of our Cathedral: at Bury St. Edmunds in one morning and about an hour in the afternoon I photographed 115 bosses.

My own work has been very largely the photography of roof bosses and corbels. The interest in the sculptures on roof bosses is that owing to their position they have generally escaped the hand of the despoiler and of the restorer, and one finds in the roofs of our churches a mass of mediaeval sculpture almost in the state that it was left in by the craftsmen who did the carving ; and these sculptures have remained almost, and in some cases quite, unknown till they were revealed by the spotlight and the telephoto lens.

But there are many details besides roof bosses and corbels that can be photographed with advantage with a telephoto lens and a spot-light. The London Survey Committee is issuing a monumental work on the history of every London parish. When they were working on All Hallows-by-the-Tower they found it very difficult to get satisfactory photographs of a number of memorials on the walls between the large perpendicular windows ; an exposure that was sufficient for the monument was badly fogged by the light from the windows. But by choosing a very dull day in autumn it was quite easy to get photographs with a spot-light. A telephoto lens was used and the camera was placed on the opposite side of the church ; a short focus lens close up would have entailed pointing the camera at a considerable upward angle, which makes difficulties as every photographer knows. I was able to get pictures of a number of monuments which were published in one of the volumes of the London Survey Committee.

The early fourteenth century carvings of the quire stalls in our Cathedral presented a rather similar problem. With a moderate focus lens and the camera close up to the subjects the camera would have had to be pointed upwards very considerably, but by placing the camera at the back of the stalls on the other side of the quire and by using a telephoto lens this difficulty is got over. But there is another difficulty with these panels, each one has a small pillar in front of it. The panels have to be photographed at an angle, and therefore their photographs are slightly askew ; but taken from a distance with a telephoto lens this is not very noticeable. These sculptures can be taken by ordinary light, but a spotlight makes them much easier to take.

There are very many subjects which are much improved if they are photographed by a spotlight, but care must be taken not to emphasise the shadows too much, that is to say the camera and the spot-light must not be too far apart.

There are many subjects also besides carvings that may profitably be photographed by a spot-light and a telephoto lens. The unique wooden painted roof in the nave at Peterborough was pointed out to me as a subject by Professor Borenius ; this was painted about 1220. I photographed it piece by piece so that now a complete record exists should some dire accident befall it.

Although I have described the spot-light I have been using, yet at times, if I wanted to travel light, I have used a large electric torch, of a kind that is I believe used by those who shoot tigers at night. It is quite efficacious, and with its help I have photographed wall paintings in Greek churches in Cyprus, such churches being usually so dark that photography without some form of artificial light is well nigh impossible.

The archaeologist will doubtless think of many things whose photography would be helped by a spot-light. I have photographed graffiti, scratched on the wall of a church, by placing my spot-light so that the beam glances along the surface of the wall. This brings out every slight scratch on the wall. The details on many carved stones in the open might perhaps advantageously be photographed at dusk with a spotlight. Even the sections of trenches in a "dig" might be photographed in the same way; it is at times difficult to choose the right time of day to get the best light to show some particular point, but with a spot-light one can suit one's light to the subject and by moving the source of light one can take the same subject under different illuminations.