

## Notes and News

### LIFTING MOSAICS

PLATE XV

The discovery of a mosaic floor during an excavation always raises a problem of policy. Shall it be preserved *in situ*, removed to a museum, or reburied? Or shall it be photographed and destroyed?

To obtain the best results from the excavation, its removal is usually desirable, for the recovery of coins and datable pottery from beneath it would be a valuable, and at present all too rare, addition to our knowledge of the history of the mosaicist's art. To preserve it *in situ* robs us of such direct knowledge, and involves considerable expenditure in building a hut over the floor and in making the site weatherproof. Moreover damp may still rise through the floor and in time cause damage: frost can play havoc with a damp floor, and *algae* will appear to discolour it. Reburial of the floor or its destruction are mere counsels of despair.

The classic description of a modern method of raising a mosaic is that by Mrs T. V. Wheeler in *The Museums Journal*, xxx (1933), pp. 104 ff., and it has been reprinted by Sir Mortimer Wheeler in *Archaeology from the Earth*, pp. 111–13. It is a method of some elaboration, but its success can be judged by a glance at the splendid mosaics now preserved in the Verulamium Museum.

Apart from its elaboration, however, the method has one or two disadvantages. In the first place it involves the use of glue, which is difficult to melt and apply in the open air. A more serious disadvantage is the need to dig a trench 1 ft. wide by 18 in. deep round the floor to drain it, together with the disturbance caused by pushing planks beneath the floor in order to reverse it. Both these operations are liable to disturb the lower layers which may contain the vital coins or pottery. Finally, large floors have to be dismembered, and the cuts can never be quite eradicated in restoration.

In 1957 a mosaic floor was found in Building 3 of Insula xxvii at Verulamium,<sup>1</sup> and since it appeared desirable to preserve it in the Museum, a new method was evolved of dealing with it by means of a plastic solution using a volatile solvent. I was fortunate in having the help on the site of Mr W. S. C. Kennett of the Plastics Division of Imperial Chemical Industries Ltd., and to him is due the credit for evolving the method and of providing notes on which the first part of this article is based. The work was superintended by Dr Norman Davey, F.S.A., who was responsible for the remounting, and he has kindly sent me details of the method used. As a preliminary we experimented with rubber latex on a small outlying piece of plain floor, but found it did not grip.

The mosaic was first cleaned and washed thoroughly for photography, and was then allowed to dry. We were fortunate in the weather, so that the only precaution taken was to spread a tarpaulin over it at night. Complete dryness can be tested by applying some of the plastic solution to a small piece of floor: if the floor is still damp, the film will turn cloudy. In one or two areas we applied methylated spirit and ignited it to hasten drying.

As soon as the floor was dry, it was given a good brushing with a stiff brush, making sure that as much earth as possible was removed from the interstices. This step is important

<sup>1</sup> Interim report forthcoming in *Antiq. Journ.*, xxxviii, January/April 1958. The floor, a late one, was only just below the plough-soil, and had been cut into by the foundation trenches of a medieval timber cottage.

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as the absence of earth enables the adhesive to penetrate round each tessera: thus a good bond is obtained.

The adhesive used had the following formulation:

P.V.C. co-polymer 'Corvic' Q44/62	.	.	.	100 parts	by weight
Methyl ethyl ketone	.	.	.	500 parts	
Toluene	.	.	.	100 parts	
Dioctyl phthalate or dialkyl phthalate	.	.	.	10 parts	

'Corvic' Q44/62 is the registered trade name for a co-polymer manufactured by Imperial Chemicals and may be obtained by writing to the following address: Imperial Chemical Industries Ltd., Plastics Division, Black Fan Road, Welwyn Garden City, Herts. (for attention of Technical Service and Development Department).

The solvents and plasticizers are obtainable from British Industrial Solvents Ltd., Hull.

The correct amount of co-polymer is shaken, or preferably stirred by a mechanical stirrer, with the calculated amount of methyl ethyl ketone and toluene. This may take some time if merely shaken. The plasticizer (dioctyl phthalate) is then added and stirred into the solution.

Once the floor was ready, a thin coat of the solution was spread on its surface with a trowel, making sure that all cracks were filled and all surfaces wetted. This coat was allowed to dry before the work was continued. A second coat was then applied very thoroughly, and this was left until a hard skin had been formed so that it was possible to walk on it without breaking this skin. At this point a thin cotton cloth of close weave was laid over the treated floor. This material was obtained from a draper's store and was 82 in. wide; but if the cloth does not cover the floor an overlap of about 2 in. is required. The solution was poured over it starting at one end, the cloth being pulled so as to even out the creases, so that it could set under tension. Care was taken to ensure that the cloth touched all parts of the floor.

In all, two gallons of solution were used on the floor, the area under treatment being 5 ft. by 9 ft. The whole was left to dry out for 18 hours.

Once the adhesive was dry, the raising of the floor was begun. This consisted of undercutting the mosaic and loosening the mortar basis with a trowel: the freed mosaic was then pulled back to expose more uncut mortar. In practice this mortar basis was very decayed owing to local conditions and was easily loosened with two or three strokes of the trowel; with more intractable material a cold chisel and hammer might have to be employed. As the process continued, the floor was rolled back over two cardboard drums and then passed, cloth down, on to a sheet of hardboard for transportation to the Museum (PLATE XV, a). As a matter of fact, it was only just possible to manoeuvre it through the doors of the Museum, and we concluded that it would have been better, and in the case of a larger area of floor necessary, to roll it up like a carpet. The tensile strength of the p.v.c. sheet was sufficient for such treatment.

Once in the Museum, the back of the mosaic was thoroughly cleaned, especially the interstices, with brushes, knife blades, and even a vacuum cleaner. Meanwhile a shallow wooden frame was constructed with a plywood base, in which the mosaic was laid face downwards. The frame, 2 in. deep, was mounted on bearers which were themselves supported on trestles (FIG. I, I). Next a fillet of Portland cement mortar (1 part cement to 1 part sand by weight) was put round the edges of areas where tesserae were missing, and these areas were then filled with dry shingle (FIG. I, II). This was to prevent the backing next to be applied from penetrating to the front through these gaps. First, however, a slurry of Portland cement and water was brushed well into the back of the mosaic, after

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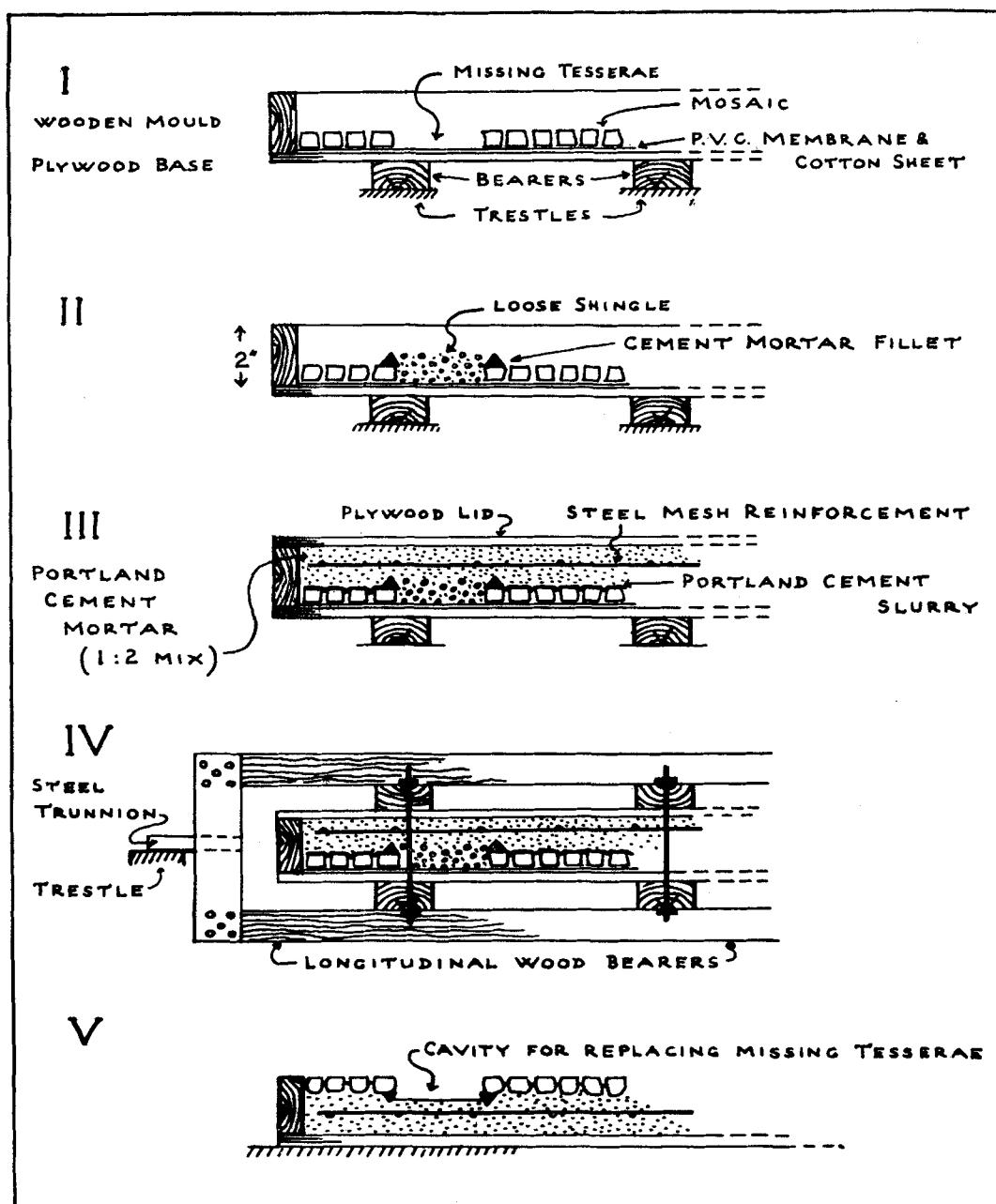


FIG. I. Sketch to illustrate stages in the process.

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which the backing, of Portland cement mortar (1 : 2 mix) was spread to a depth of 1 in. On this was laid a steel mesh reinforcement (B.R.C. 6 in. square mesh) and then more cement was applied, tamped well into position and screeded off level with the top of the mould.

Once this bed of cement was dry, a lid of plywood was affixed (FIG. I, III). To reverse the floor additional cross bearers were added above and bolted to those already in position below. A longitudinal bearer to act as axle was then fixed centrally to the cross bearers on each side by steel brackets: these longitudinal bearers had special end-blocks carrying a steel trunion. Under these trunions trestles were placed at each end and the whole slab reversed by rotation (FIG. I, IV, and PLATE XV, b). The longitudinal bearers were removed and the slabs (which weighed about  $\frac{3}{4}$  ton) lowered to floor level by jacking down.

Next the plywood lid was removed and the p.v.c. sheet stripped off in ribbons without the use of solvent. At first solvent was tried, but it was found that a much cleaner job resulted from just ripping the sheet off in strips: it brought with it some of the residual dirt. When the loose shingle was brushed away cavities were left in the gaps in the mosaic which could be made good either with spare tesserae set in cement slurry, or with a plain surface of cement, which in turn could be later painted or left plain (FIG. I, V).

The floor now lies in the Verulamium Museum. It is still all in one piece as its makers made it, and with the slight irregularities of its surface it lacks the smoothly artificial aspect of the normal rebuilt pavement. To its excavator it looks, in fact, like what he remembers digging up.<sup>2</sup>

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<sup>2</sup> A 16 mm. film in colour was made for the Institute of Archaeology by Mr M. B. Cookson illustrating all phases of the operations described here.

### BYZANTINE EXHIBITION, 1958

An exhibition of Byzantine art is being arranged for this summer; it will open in Edinburgh on 22 August, as the principal 'Art' activity of the International Festival. After three weeks it will be transferred to the Victoria and Albert Museum in London; it will open there on 30 September and will close on 8 November.

The primary object is to give a picture of the Art of Constantinople between the foundation of the city as the capital of the Christian world in 330 and its conquest by the Turks in 1453. A few objects of early date from other places will however be included in order to bring out the essential characteristics of the Constantinopolitan style, while a number of paintings and icons of late date will also be shown, to illustrate the legacy of Byzantium after the Turkish invasions.

Objects are being loaned from museums and Cathedral Treasuries all over Europe, and will include some of the finest works that have come down to us. Especially noteworthy are pieces of silver plate from Nicosia in Cyprus, from the Constantinople Museum, and from the Hermitage Museum in Leningrad, which are not likely to have been seen by more than a very few people in western Europe owing to the inaccessibility of these places so far as the average traveller is concerned. Some fine ivories and a number of painted panels—icons—dating from the 12th and following centuries, are also coming from the U.S.S.R.; they are of outstanding interest for the same reason and also because it is there that the finest examples of these early panels are preserved. Some pieces of silver, jewellery and other notable objects which are not likely to be familiar to more than a few are also coming from Turkey.

Loans from western Europe include ivories of early date, notably Consular diptychs, as well as ones of the 10th, 11th and 12th centuries, the so-called 'Second Golden Age' of