

# The Conservation of Geological Materials

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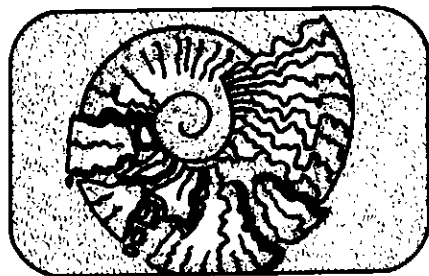
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## The Conservation of Geological Materials

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The Conference on the Conservation of Geological Materials was held 23-24 January 1986, at the British Museum (Natural History), (BM(NH)). The conference was organized by the Geological Curators' Group (GCG) in association with the BM(NH) and sponsored by ICCROM and the Geological Society; it attracted over 80 registrants from Britain, Europe, Canada and the USA.

The GCG was founded 12 years ago by a group of curators from museums outside London who were concerned about the lack of facilities and expertise for preservation of geological collections. The objectives of the GCG are as follows: to hold meetings for exchange of information; to provide information and advice on all matters concerning geology in museums; to prepare a code of practice for geologists in museums (Brunton *et al.*, 1985); to promote documentation of the conservation of geological sites through the National Scheme for Geological Site Documentation; to conduct a survey of geological collections throughout the UK and advise on their care and maintenance (Doughty, 1981). The activity of the group has resulted in a change in attitude toward geological collections in the UK and has undoubtedly saved many collections from oblivion. The London conference went a long way toward satisfying the first two objectives stated above. In two days of talks and practical demonstrations, registrants were treated to a wealth of information on all aspects of geological curation. Talks were grouped according to subject matter and covered health and safety considerations, documentation, problems of adequate staffing, environmental control and practical application of conservation techniques to a wide variety of geological materials, with a heavy emphasis on paleontological materials.

Conservation as a discipline is not widely practised in the earth sciences; it is more readily associated with art and archeology

museums. Nevertheless there are many conservation problems with geological, and particularly paleontological, materials. Fortunately much ethnographic and archaeological conservation involves many of the same materials (bone, wood and stone) as are found in geological collections and the data bank of knowledge assembled by conservators in the humanities can be used in the treatment of fossils and minerals. To this end the organizers invited four speakers from archaeology museums to share their knowledge. J. Ashley-Smith presented a straightforward, common-sense approach to environmental control in museums. S. Keene gave a very useful overview of consolidants used in archaeological conservation, including a discussion of the different properties of consolidants and adhesives, criteria to use in choosing the appropriate material and the characteristics and uses of a variety of different products. S. Bradley spoke on the use of silanes in the conservation of stone. R. Jaeschke outlined materials and methods used for cleaning, consolidating and repairing stone artifacts.

Not surprisingly, the majority of talks dealt with some practical aspect of conservation of geological material. A full afternoon was dedicated to the conservation of fossil and sub-fossil bone. To prevent damage, waterlogged bone must have the water replaced by a consolidant without undergoing a change in volume. M. Walders described methods for impregnating bone by immersion in polyethylene glycol or water-soluble epoxy resin. A. Doyle described a method of impregnating bone with polyvinyl acetate using a gravity drip. This last method was demonstrated in the paleontology laboratory later that afternoon. It was interesting also to see a video of the collection and preparation of a nearly complete dinosaur skeleton and to see some of the bones being prepared.

M. Collinson presented a brief survey of the different types of preservation encountered in paleobotanical material and the various conservation problems associated with each. Much paleobotanical study requires sectioning the specimen, risking exposure of hitherto protected components, particularly finely disseminated pyrite, to the destructive elements of the atmosphere. In addition to conservation, careful documentation of every stage of preparation is essential as the integrity of the specimen is often destroyed by the investigation.

The treatment of decaying pyritiferous specimens has been the subject of research at the BM(NH) for many years. L. Cornish reviewed treatments used in the past and outlined the recent use of ethanolamine thioglycollate to arrest and reverse the decay process (Cornish and Doyle, 1984). This process was demonstrated in the laboratory.

The removal of fossils from matrix is a routine procedure in paleontology which has been practised for almost as long as the

science itself. Preparation and conservation of fossils go hand-in-hand, since removal of the matrix makes the fossil more fragile. W. Lindsay outlined acid preparation of vertebrate fossils, including the use of various consolidants and adhesives to strengthen the bone during the process of preparation. J. Wilson outlined various methods for preparing calcareous fossils from a calcareous matrix by taking advantage of minor chemical and physical differences between the two and suggested several potential research projects into chemical methods of preparation.

The conference offered far more than a catalogue of preparation techniques. Specimens form the back bone of our knowledge in earth sciences and deserve at least the same interest and commitment as the disciplines they support. I came away with the feeling that geological conservation is an active interdisciplinary concern. Petrographic analysis of the matrix gives us clues to the best method of preparing the fossils. A knowledge of mineralogy and chemistry helps us understand the limits of stability and environmental requirements for storage of different materials. Complete documentation of all treatment is essential, since many chemicals are incompatible and the use of one material for treatment may render a subsequent treatment ineffective or even dangerous. Finally, we must not be afraid to cross the time-honoured boundary and learn from our colleagues in the fields of art and archeology.

The meeting was well organized and the quality of talks extremely high. My only criticism was the lack of time for registrants to meet and talk to one another informally. The large number of participants, while undoubtedly gratifying to the organizers, meant that laboratory tours had to be run in shifts, cutting out the one place in the programme where informal interaction could have occurred and cutting short the discussion period at the end of the programme. Nevertheless it was an extremely worthwhile experience and the list of participants will provide a useful starting point for future contacts. The proceedings of the conference, to be published in a future issue of the *Geological Curator*, will be a useful addition to any paleontological laboratory.

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