TO COMPARE THE RUINS OF A Classical Greek temple with those of a Norwegian Romanesque cathedral would not at first seem to be a very constructive undertaking. Geographically, the two cultural environments have no special connection: it is a long way from the Apollo Epicurius temple in Bassae to Christ’s Cathedral in Hamar. The span of time is also great – around 1,600 years. Even climatically the problems are rather different. And yet, in the light of the Charter of Venice, both are subject to the same principles regarding their preservation; both ruins are seriously threatened, and the practical and theoretical problems they present seem almost insurmountable.

In their respective countries both monuments hold a very special position: with regard to the country’s history, to the effect they have on the visitor, to their place in the local environment. In Greece as in Norway, archaeological and petrological investigations are closely connected with the work on the preservation of the monument. Both countries, quite independently of each other, have set up the same aims: 1. An immediate rescue operation. 2. Long-term planning for the monument’s permanent preservation.

We shall not here go into the details of the extensive and important work planned at the temple at Bassae. The problems there are mainly concerned with the monument’s stability, as the ground on which it stands is giving way and one row of columns is leaning dangerously. In 1985, the temple, which is thought to date from 420-410 BC, was proposed for inclusion on the World Heritage List, not only because of its outstanding position in art-historical terms with its Doric style subdue by Ionic elements and the earliest Corinthian column known, but also because of its threatened situation. Instead, we shall limit ourselves to an outline of the problems involved in preserving a Romanesque ruin in a severe Nordic climate and how it is planned to solve them.

The cathedral ruins on the shores of Lake Mjøsa in E Norway have been Hamar’s trademark for many centuries, in fact since 1567, when the cathedral was set on fire by the Swedish troops occupying the town. Until then it had been the cathedral church for the bishopric of Hamar which was established in 1153. It can also be regarded as the inspiration for a significant group of stone-built churches which were erected in the bishopric during the late twelfth and thirteenth centuries. In true Gothic tradition the chancel was extended eastwards around 1300 and a stone-vaulted vestry and a Gothic chapel were added on the north side of the chancel.

When it was at its prime, Hamar Cathedral was the largest and most significant building between Oslo and Trondheim. The wooden houses of the townsmen, which according to the Hamar Chronicle were clustered on the east side of the town, have long since disappeared, but the ruins of the cathedral at Hamar is Hedmark. La cathédrale fut détruite immédiatement après la création de l’évêché en 1153. En ruines depuis...
bishop’s palace are still standing to the east of the cathedral ruins on the promontory which formed the ecclesiastical area.

The church had been built with fine ashlar blocks, set in lime mortar. The exterior had probably not been plastered, but it may have been lime-washed. A sedimentary rock was used as the building stone, a relatively poorly consolidated limestone compared with the volcanic and metamorphic stone, such as granite and gneiss, which are the most widely-used building materials in Norwegian medieval stone churches.

The great fire which destroyed the cathedral in 1567 naturally had a serious effect on the stone surfaces which were in direct contact with the high temperatures, splitting the stone and allowing rain water to penetrate more easily. Weathering and frost damage have therefore reached a more advanced stage here than in the more protected parts, where intact stone surfaces can still be found. The tall colonnade and the portions of walling above them have been particularly susceptible to weathering. Through observations made by the Norwegian Institute for Atmospheric Research we can deduce that acid rain has played a minor role in the total disintegration.

The conservation of the cathedral ruins has been carried on in a traditional way since the 1920s. The walls have been given a watertight coating and the columns have been repointed, and this has proved to be more or less adequate for the lower sections of the walls. However, the mid-section of the south wall of the nave and especially the three columns carrying the portion of the clerestory are now showing increasing signs of damage. It is quite clear that the load-bearing capacity of the columns is considerably reduced due to the weathering of the limestone masonry and the washing out of the mortar. In this century a fairly strong cement mixture has partly been used for re-pointing, and there are strong indications that this has led to a more serious disintegration of the friable limestone, as the strong joints do not take up any movement and perhaps also retains moisture longer than the pure lime mortar.

As a result the decay has continued, in spite of continuous regular maintenance. For many years now there has been concern about the stability of the colonnade. In due course it has become increasingly obvious that the traditional form of regular maintenance — i.e. checking the joints and the wall capping and replacing the occasional loose stone — is not adequate.

In 1983 a professor in building technique described the situation thus: “In contrast to the walls, the columns are in a terrible condition. In some places they are so bad that the authorities should have intervened long ago and forbidden all public access anywhere near them.” Other comments have been in the same vein.

After such a comment from a specialist it was obvious that effective measures to stabilise and protect the ruin were urgently necessary. In order to attain the main objective of preventing continuing frost damage, while at the same time complying with other security demands, action on three fronts was necessary:

1. Protection from precipitation.
2. Protection from wind.
3. Removal of moisture from the masonry.

In the autumn of 1985 a provisional polythene shelter was therefore erected, where also subsequent work on conserving and stabilising the ruin took place.

Frost damage on one of the pillars of the ruined cathedral at Hamar.

en bois des citadins, qui, selon la chronique de Hamar, étaient groupées dans la partie orientale de la ville, ont disparu depuis longtemps, tandis que les ruines du palais épiscopal se dressent toujours à l’est des ruines de la cathédrale, sur le promontoire du périmètre ecclésiastique.

L’église avait été construite en blocs de pierre de taille de qualité, posés sur du mortier de chaux. L’extérieur n’avait sans doute pas été enduit, mais il peut avoir été chaulé. C’est une roche sédimentaire qui a servi de matériel de construction, une pierre calcaire relativement peu solidifiée, à comparer avec les pierres volcaniques et métamorphiques, comme le granite et le gneiss, qui sont les matériaux les plus largement répandus dans la construction des églises médiévales norvégiennes en pierre.

L’incendie qui détruit la cathédrale en 1567 eut naturellement de graves conséquences sur les surfaces de pierre qui firent en contact direct avec les températures élevées, cressassant la pierre et laissant l’air de pluie s’infiltérer plus facilement. C’est pourquoi les déséquilibres dus à l’altération atmosphérique et la gelée ont atteint un stade plus avancé que dans les parties mieux protégées, où l’on peut encore trouver des surfaces intactes. Le haut de la colonnade et les pans de mur au-dessus des colonnes ont été particulièrement exposés à l’altération atmosphérique. Grâce aux observations faites par l’Institut norvégien pour la recherche atmosphérique, on a pu déduire que les pluies acides n’ont joué qu’un rôle très minime dans le phénomène de désagrégation.

La conservation des ruines de la cathédrale a été poursuivie d’une manière traditionnelle depuis les années 1920. Les murs ont été munis d’une chape étanche et les joints rejointoyés, avec des résultats plus ou moins bons pour les parties basses des murs. Cependant, le milieu du mur sud de la nef et surtout les trois colonnes qui soutiennent la partie à claire-voie montrent maintenant des signes croissants de dégradation. Il est bien évident que la capacité des colonnes à supporter la charge est considérablement réduite en raison de l’altération de la maçonnerie calcaire et de la dissolution du mortier. De nos jours, on a utilisé pour le rejointoyage un mélange de ciment assez solide, et il y a de sérieuses présomptions pour que cela ait aggravé la désintégration du calcaire friable, car des joints solides n’épousent aucun mouvement et retennent peut-être aussi l’humidité plus long-

temps que le simple mortier calcaire. Par conséquent, le délabrement s’est accentué en dépit d’un continuel entretien courant. Cela fait de nombreuses années que l’on a des inquiétudes au sujet de la stabilité de la colonne. En fin de compte, il est devenu de plus en plus évident que, sous sa forme traditionnelle — vérifier les joints et la chape, remplacer les éventuelles pierres brisantes — l’entretien courant est tout à fait insuffisant.

En 1983, un professeur en technique de construction a bien décrit la situation : « Contre-ment aux murs, les colonnes sont dans un état épouvantable. Il y a des endroits où elles sont en si mauvais état que les autorités auraient dû interve nir depuis longtemps et interdire au public tout accès à proximités. » Il y a eu d’autres observations de la même veine.

Après un tel commentaire venant d’un spécialiste, des mesures efficaces pour stabiliser et protéger les ruines devenaient évidemment nécessaires et de toute urgence. Pour atteindre l’objectif principal : empêcher que ne progressent les dégâts causés par la gelée, tout en prenant en compte certains temps à d’autres impératifs de sécurité, il était indispensable de mener l’action sur trois fronts:

1. Protection contre les précipitations.
2. Protection contre le vent.
3. Assainissement de la maçonnerie.

aussi, à l’automne 1985, une bâche goudronnée provisoire a-t-elle été dressée, où l’on pourrait également continuer dans la suite, protégé du vent et des intempéries, le travail de préservation et de stabilisation des ruines. Il faut souligner que tout ceci fut décidé et mis à exécution sans aucun souci de l’esthétique — la protection proposée pour Bassae est certainement d’un aspect plus élegant! En réalité, ce n’est pas sans arrière-pensée qu’on a construit une telle horreur autour des plus belles ruines du pays: plus l’abri était vilen, plus rapidement fallait-il résoudre les problèmes et enlever la bâche goudronnée.

L’abri temporaire fut prêt en novembre 1985. Les colonnes sont désormais en sécurité et on peut envisager leur consolidation plus durable.

Pour la Direction des Monuments Historiques, il ne s’agit pas seulement de prendre des mesures de sécurité techniquement défendables. La solution choisie doit aussi coïncider avec l'avis des
La cathédrale du Huma en 1986 temporairement protégée de further deterioration. In 1987 an architectural competition was announced to find the best permanent form of protection.

which must be resolved reasonably. There are several possibilities:
1. Deep re-pointing and careful injection with an appropriate binding agent working from the bottom upwards.
2. Fixing metal collars round the columns. There must be a separate collar round each course of stones in the column shaft, which must subsequently be plastered over.
3. Boring through the core of the column from above and injecting it with an appropriate binding agent.
4. The total or partial replacement of the columns with new limestone.
5. Encapsulating the whole ruin in an architectonically suitable superstructure.

Suggestions 1 and 3 can secure the ruin satisfactorily for a number of years, but the surface disintegration will continue to be a problem, and the scientific value of the ruin will also be affected.

Suggestions 2 can also secure the monument satisfactorily but the surface rendering will be a foreign element and will require constant maintenance.

Suggestion 4 will solve the problem both of the stability of the columns and their weathering for the foreseeable future. But the high scientific and historical value of the original columns will be removed. It is also doubtful how much of this material can be saved during the dismantling and subsequent erection elsewhere under cover.

Suggestion 5 offers maximum security for the surviving original material, but the effect of the monument in the local landscape will of course be totally changed. Nevertheless, this is the solution which has been chosen and which is now being considered in detail through an architectural competition announced in the spring of 1987.

Once the historical conditions have been elucidated, we will be on the threshold of an architectonic challenge which will be unlike anything we have ever seen before in Norway. We hope and trust that our architects will provide ideas for solving this national problem.