

Preface

The air contains numerous particles of diverse origin (mineral dust, pollen, spores, bacteria, plant and animal fragments, chemicals etc.), many of which have had, and are continuing to have, a detrimental effect on both people and their cultural environment. Since the air itself is a highly fluid medium, these particles are genuinely intermixed. It follows, therefore, that any study of airborne particles must, inevitably, be an interdisciplinary one. However, the structure of academic research is often such that specialists in one type of airborne particle, e.g. pollen, have no concept of the behaviour of another, e.g. volcanic silica. At the same time air masses are highly mobile and recognize no political boundaries, so that any study of the air must also be of an international nature. With these two facts in mind, the need to collect together a wide range of research workers from all over Europe, and the need for these specialists to represent highly divergent disciplines, the first workshop on *Airborne particles and their negative effects on the cultural heritage, the environment and man* was held in Ravello, Italy in December, 1989.

As is frequently the case when attention is being focused on a concept which has not previously received notice, the first meetings are generally of a review nature. In this way, the breadth of field can be ascertained and those areas requiring further development pinpointed. As a result a second workshop entitled *Man-made and volcanic particles and gases: their impact on different environments and their effect on the cultural heritage* was held in Ravello, Italy in December 1990 to focus on three areas which have not necessarily received sufficient attention and to look more specifically at these in the same international, interdisciplinary manner. These areas were:

1. Chemical changes in soils caused by airborne particles which influence the status of archaeological artifacts.
2. Fly ash particles and their impact on the natural and cultural environment.
3. Different gases and their individual and combined effects in both urban and non-urban environments.

The present volume gathers together the papers presented at both workshops.

This is not intended to be an exhaustive representation of all results so far produced in this field. In the case of the changes caused to archaeological artifacts while they are still buried, this field of research is so much in its infancy that it is more a question of making people aware that the problem exists so that scientific investigations can be initiated. In contrast, the impact of fly ash, is much better known and intensive investigations have already been made for restricted parts of Europe, thus in this field it is a question of refining methods and making them internationally available so that the whole of Europe can be chartered and mapped. In the case of gases, for example, the effects are well known for individual gases under laboratory conditions but emphasis needs to be focused on the impact of a mixture of gases in the real world situation.

The articles which follow, therefore, should be viewed in terms of pinpointing those fields where attention could profitably be focused in the future. They are separated into sections simply for convenience but this should not detract the reader from the fact that they are all dealing with particles which are present together in the air and that ultimately it is these airborne particles which are altering and frequently destroying our cultural heritage our environment and, ultimately, ourselves.

The editors