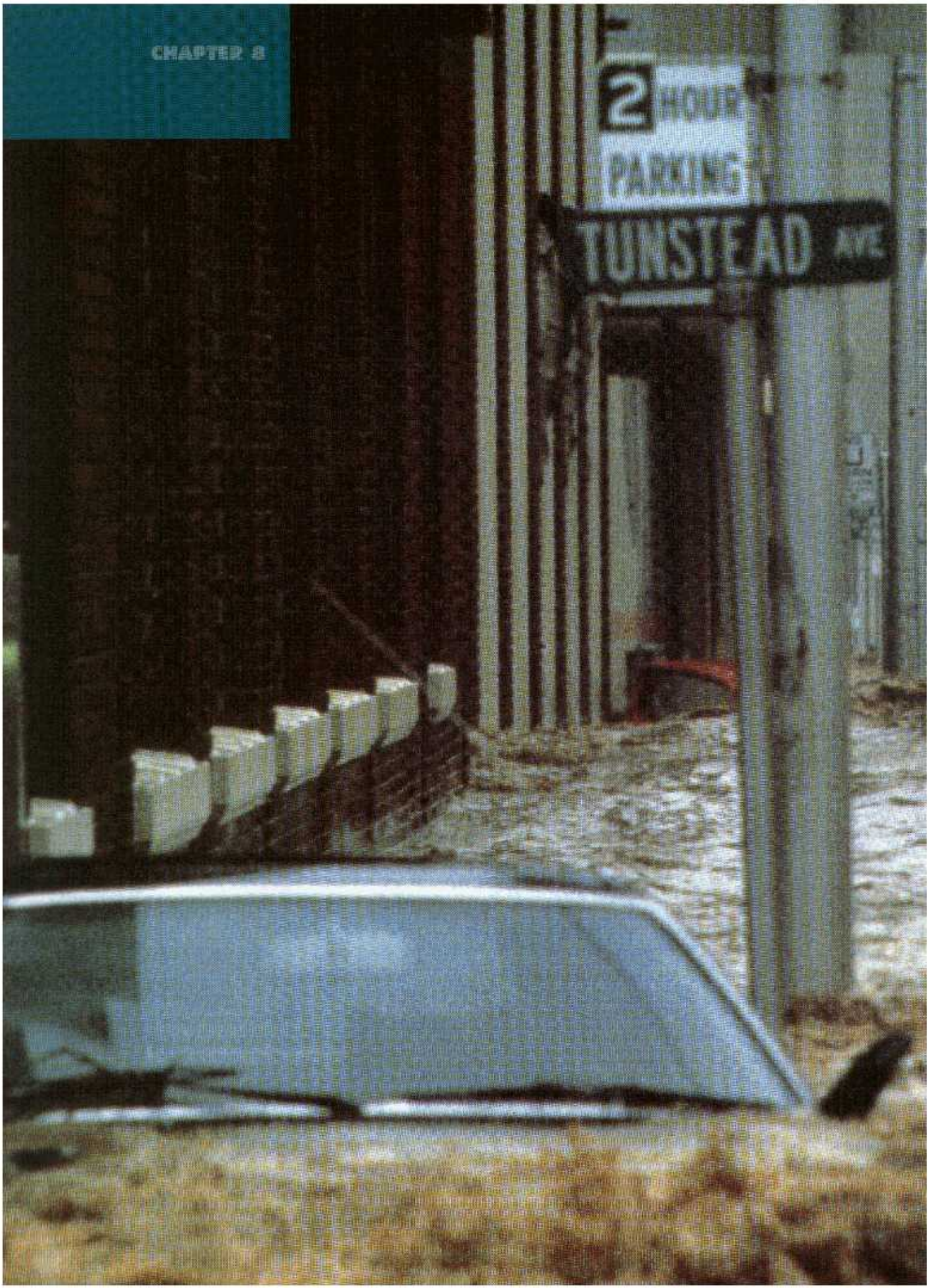
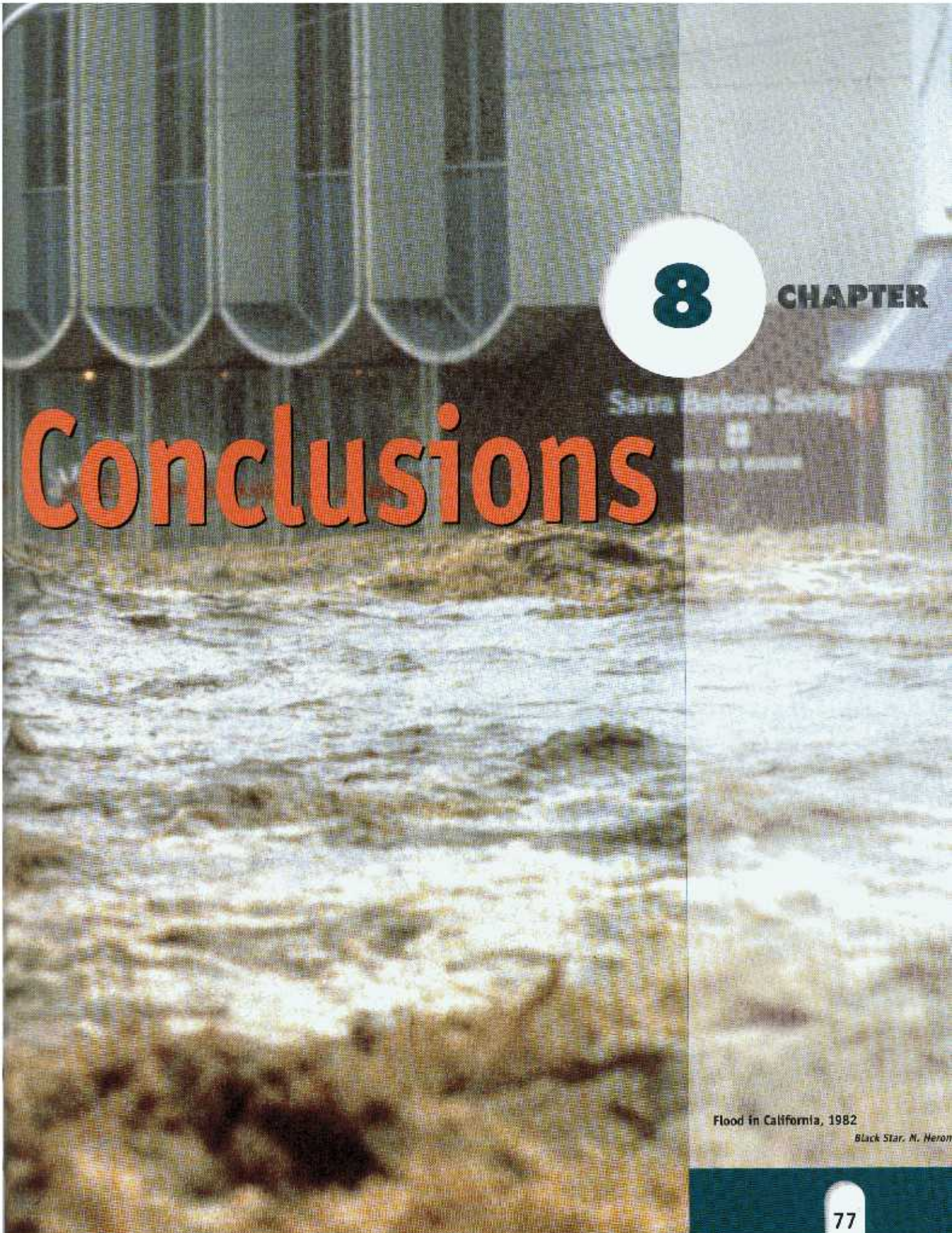
CHAPTER 8





CHAPTER 8

Conclusions

Flood in California, 1982

Black Star, N. Heron

Conclusions

The reduction of damage from flooding requires a combination of three different strategies. These may briefly be described as:

- Keep the flood away from people;
- Keep the people out of the way of the flood;
- Clean up afterwards.

Under the first strategy "Keep the flood away from the people" are included measures to contain or reduce the flood. These are, largely, the structural flood control measures discussed in chapter 4 and involve using principally dykes or levees to keep the flood confined to the river channel and away from valuable installations on the flood plain. In most countries this was the first method tried to prevent flood damage and dykes are found in use in most societies once they have become sufficiently developed to be able to organize the large effort needed to construct a system of dykes. The ancient Chinese used dykes to control floods on their major rivers and European settlers in North America started building dykes as soon as they could afford them. Dykes, of course, can never contain all floods and more recently flood control reservoirs have been added to the strategy with the aim of holding back some of the flood waters and thus reducing the maximum height of the flood that the dykes have to withstand.

Soil and water conservation, though a non-structural measure, can also be included under this first strategy of reducing the flood. Conservation reduces floods at source by promoting increased infiltration of precipitation that is then stored in the soil and released more slowly so maintaining the dry weather flow of rivers and thus increasing the availability of the water for human use. Conservation also minimizes soil erosion and land degradation, which both reduce the productivity of the land, and so it helps economic development by increasing rural incomes and food production.

Increasing flood losses, despite large expenditures on flood protection works, led by the middle of this century to the realization that floods could not be conquered in this fashion. This war-like terminology was frequently used and prevented a more rational approach that acknowledged the power of flood waters. In reality, any structures to contain floods will at some point be overcome by a flood of greater magnitude and once this is realized, the way is open for the adoption of the second strategy "Keep the people out of the way of the flood". In essence, this means avoiding developing in flood-prone areas. This simple prescription is, of course, impossible to follow in full. There are already many valuable developments, including major cities, in flood plains that cannot be removed elsewhere and in addition the flood plain provides many valuable services, even despite this danger. Any new developments, however, need to be planned taking into account the danger of flooding. For this purpose, accurate maps showing the extent of flooding, flood plain maps as described in chapter 5, are needed as a basis for rational land use planning. Where developments cannot be removed from the flood-prone-areas, the other non-structural measures described in chapter 5, including floodproofing of individual buildings and flood forecasting to provide warnings that would allow suitable precautions to be taken by the population, become important. This strategy acknowledges that floods will occur, despite the best efforts of the river engineers to contain them and concentrates, instead, on minimizing the opportunities for damage.

Lebanon Junction/Kentucky: Vice president Al Gore visiting flood, March 1997.
Sipa Press. J. Sommers II

The third strategy "Clean up afterwards" also acknowledges the inevitability of floods. This "strategy" is, of course, forced on any flood-prone community, whether it decides to adopt it or not, but planning for the eventuality of a flood ensures that damage is minimized and that life gets back to normal as quickly as possible after the flood. The post-flood disaster relief and recovery will require the same actions as any other disaster, but there are a number of features peculiar to floods that are described in chapter 7. That chapter also discusses flood-fighting, that is the procedures necessary to ensure the integrity of flood defences during a flood and to keep the population informed of how to protect themselves and their property during the flood. Again, a plan, agreed in advance, is needed for all to know what they are to do in case of flood.

These three strategies are not alternatives, but are complementary to each other. Elements of each need to be considered in any flood mitigation scheme. To provide a rational framework for the design of flood mitigation or alleviation, the concept of flood plain management was introduced in chapter 3. This management must start from a knowledge of the problem: where does flooding occur and how often? The flood plain map encapsulates this information and is an essential tool for planning the safe development of the flood plain. Once the problem has been defined in this way, the flood control measures to be adopted can be decided. Normally, of course, there will be existing flood defences and