Preface

An earthquake laid the foundation for this book—a not especially remarkable earthquake when compared with some others. About 1,000 people lost their lives and around 100,000 lost their homes. These are relatively insignificant figures when one considers that in this century alone more than 1.5 million people have lost their lives through earthquakes. Possibly as many as 655,000 perished in the last great earthquake of Tangshan, China, and 700,000 more people died in only four other quakes. One earthquake report from medieval China shows just how violent the earth can become and helpless man is: The quake of 1556 that scourged Shansi province claimed 830,000 victims.

This one insignificant quake that struck the province of Friuli in northeastern Italy on May 6, 1976, acquired a special meaning for me for purely emotional reasons. A member of a native German-speaking minority, I had grown up in the rugged mountains in one of the small villages the quake reduced to ruins. My parents had continued to live there until that fateful night when they had to abandon the ancestral home. I had been working in South America at the time of the earthquake, and I immediately left for my native village to find out just how extensive the destruction had been.

To return to these places that held so many different memories for me and that were now ruins was depressing. But what left the most profound impression on me was meeting and talking with the people living there, most of them peasants, whom I had known since childhood. Driven from their farms, they were living in tents, hay sheds, and roughly built shelters in constant fear of additional tremors. The talks I had with them motivated me to carry out my study and to write this book. When they would describe to me the course of the catastrophe and their own fate, they would often bring the conversation around to a strange phenomenon they had observed that they thought might interest me since I was a scientist: Animals had acted very strangely

before the earthquake. "If we had only understood them!" an old woman said to me, and her words kept going through my head.

I knew very little about the reasons for these mysterious phenomena myself. I had occasionally read brief reports of them in newspapers, and I also knew that the peasants of the earthquake-plagued Andes believed seriously that animals can predict earthquakes. They believe this so firmly that they keep birds expressly to be warned of a coming earthquake by their excited behavior. I may even have run into this phenomenon myself, by pure chance. Around the first part of January 1972 I had spent a terror-filled night in Managua, Nicaragua, which was shaken by about half a dozen medium to heavy quakes that kept sending people into the streets in panic. After midnight, when it had been quiet for an hour and a half, my friend and I went back to our hotel. Suddenly a dog's excited barking broke the stillness of the night. Barking loudly, the dog ran down the street toward our hotel (which was at an intersection) and then turned around and tore back up the street, still barking furiously. "Surely we are not going to get another earthquake," I said jokingly in an allusion to what I knew was a folk belief. Another quake struck, in fact, only 20 seconds after I had spoken.

After I had talked with the peasants of my native area, whom I trusted completely, the conviction grew in my mind that the unusual behavior of animals before an earthquake could be a genuine phenomenon. How does one explain to simple people why so much money and creative intellectual effort can be devoted to the exploration of the moon and the atomic nucleus when such basic needs as protecting people from nature's violence cannot be met—when, in fact, suggestions for it are not even taken seriously? It may be that not enough information about abnormal behavior of animals before earthquakes is available. But who has made a serious effort to carry out statistical analyses or experiments to confirm or to disprove this phenomenon?

Earthquake premonition by animals does not fit into the rational world of science, and as a phenomenon it has an added disadvantage in that it cannot be examined at will. It has become too hot to handle without ever having been seriously tested scientifically. It is considered to be an image conjured up by people looking back on a shattering experience. Any scientist interested in studying this problem would risk not only his reputation but also any chance of getting support. After I had talked with the people of my village it became clear to me that injustice had been committed here and that science had failed. I decided then to do something to change this, regardless of the

consequences to myself. I have now redeemed this promise as my contribution to the victims of the earthquake.

I knew from the beginning that there would be only one way of luring scientists out of their reserve and of forcing them to take a position: I would have to produce such a solid piece of work about the abnormal behavior of animals before earthquakes that it could not simply be dismissed as speculation. To accomplish that I would not only have to amass a convincing number of reports about this phenomenon from many countries, but (more important) I would have to advance a hypothesis about its possible causes. Only with a scientific hypothesis that could give order to a multitude of observations would it be possible to test the reality behind earthquake folklore about animal behavior and to learn whether it springs from an actual geophysical phenomenon. In my attempt to attract the interest of science to earthquake folklore I have taken the side of those simple, scientifically untrained people who have seen the warning signs, who have experienced the earthquakes, and who have had to bear the tragic consequences.

Against the scientific rules that demand that basic observations of nature must be as precise and reliable as possible, I have adopted these people's faith in what can be seen and experienced so that I might be better able to defend their case. I do not expect a single observation made by some peasant in another century to be persuasive. What I do expect to be persuasive are the close agreements among observations made by many people from different cultures and occupations and, above all, the deeper scientific meaning behind them that we are trying to find.