

Letter to the Editor

The Editorial in this journal entitled "A deontological code for volcanologists" by Derek Bostok opened an interesting debate among volcanologists who are actively involved in the assessment of risk from volcanic eruptions and have direct experience in the delicate matter of interaction with public authorities during an emergency.

For some years both of us have been involved in these problems in Italy. It happens that we have also been members of the International Committee appointed by the French Research Council in November 1976 for the Soufrière affair. We feel that the problem of the behaviour of volcanologists during an emergency was correctly formulated by Derek Bostok. Therefore we cannot share the "protest and regret" of Gudmundur Sigvaldason (Vol. 4, No. 3/4, December 1978).

At two years' distance, the volcanological community should think about the Soufrière episode in order to learn from it as much as possible. It is a matter of fact that many mistakes and misjudgements were made during and after the emergency period that led to the evacuation of 73,000 people.

The crucial point is not to discuss which of the parties involved was right and which was wrong, but rather to understand which circumstances favoured these errors and misjudgements.

A serene evaluation of the entire episode shows that it was mainly biased by two facts. The first was the attitude of the public authorities in requiring that the acceptable risk be zero. This absurd attitude points out the urgency of educating public authorities on the meaning of a probabilistic prediction of natural hazards, in order to be able to formulate correctly questions to the scientists involved in these emergencies. It must be emphasized that, the problem of correct relations between public officials and volcanologists is far from being satisfactorily solved in most countries.

It is obvious that a correct relationship cannot be created "ex abrupto" during an emergency, but it must be prepared by a long and patient joint effort. It is even more difficult to extemporize a correct evaluation of an ongoing eruptive event and its associated phenomena without: a previous systematic collection of pertinent physical and chemical data, a sound knowledge of the eruptive history of the volcano and an experience of eruptions and eruptive mechanisms. The lack of these conditions led, in the Soufrière case, to the second biasing fact: a number of observational mistakes and misjudgements. The clayish matrix of the ejecta was misidentified as new volcanic glass, pyroxene was misidentified as epidote, preliminary ground-tilt results were interpreted as indicating a dangerous inflation of the volcano, without any critical evaluation of their reliability. Tilt measurements were actually made on unstable slopes made of water soaked clayish soil. These errors, and the lack of volcanological experience of the scientists present on the spot prevented the phreatic character of the eruption from being recog-

nized, and led to an overestimate of the actual risk. A serious aspect of the problem was the attitude of some scientists after these errors were recognized, when they refused to accept the evidence and tried to hide the reality under the veil of scientific controversy about the interpretation of the phenomenon. This attitude prevented a re-evaluation of the risk once these errors were recognized.

This shows quite clearly that the call for a "deontological code for volcanologists" is justified. A scientist should accept the responsibility of contributing to a decision which involves the destiny and well-being of other people only if he has the actual professional experience which allows him to make a positive contribution to the problem. Errors and misjudgements can be made by any human under the stress of an emergency situation. But he must be ready to frankly admit them and not let his defence of a personal reputation take precedence over the general interest of the community. A scientific controversy can exist on the interpretation of factual data, but a clear and definite boundary must separate facts from opinions. By confusing facts with opinions in front of the public authorities volcanology was discredited, because it generated the impression that volcanology is more uncertain and approximate than it really is.

We agree with Gudmundur Sigvaldason that the French National Research Council, and particularly its President Mr. Robert Chabral, have to be admired for the courage and open mind shown in facing an embarrassing situation. They would be of further help to volcanology if they would decide to publish the principal scientific reports on the Soufrière 1976 event, which certainly remains as a stepping stone in the difficult and delicate matter of evaluating the risk that an active eruptive event constitutes for the people living on a volcano.

FRANCO BARBERI
Istituto di Mineralogia
Università di Pisa, Italy

PAOLO GASPARINI
Istituto di Geologia e Geofisica
Università di Napoli e Osservatorio Vesuviano
Napoli, Italy