

Reply to Editorial

As a member on the editorial board of this journal I am forced to put forward a protest and regret that the provocative "Editorial" by Derek Bostok was accepted for publication in the last issue (Vol. 4, No. 1/2, August 1978) of the journal. An "Editorial" is supposed to reflect the opinion, or at least the general feeling, of the leaders of a newspaper or a journal and I have reason to believe that Mr. Bostok's judgement concerning the role of volcanologists in general and his interpretation of the Soufrière affair in particular is open to question.

It so happens that three members of the editorial board of this journal were asked to participate in a committee, headed by Dr. Frank Press, to review work done by French geoscientists on the active volcano Soufrière on Guadeloupe in the West Indies. The committee of six people of four nationalities was established by the French Research Council (CNRS) in order to cut through the unfortunate stalemate which the disagreement amongst French geoscientists had engendered. Considering that the French government was faced with the problem of 73,000 refugees it was the prime task of the committee to pass an objective judgement of the risk involved in moving the refugees back to their homes. One possible consequence of the committee's work was that its conclusions would be interpreted to favour one of the opposing groups of scientists, condemning the other for incompetence and failure.

A few facts on the Soufrière affair may help to show who was "right" in this much publicized dispute. Following are some of the arguments which led to the evacuation: (1) increased seismicity; (2) explosive activity in the summit crater shedding tephra over inhabited areas; (3) increasing amount of fresh volcanic glass shards in the tephra which otherwise consisted mostly of water-soaked mud; (4) appearance of epidote in the tephra which was believed to indicate that the explosions threw out material from successively greater depth in the volcano; (5) comparison with historic volcanic events in the French West Indies where political intrigues led to catastrophic misjudgement; and (6) extremely difficult road situation, which made quick evacuation impossible.

The committee found that what had been identified as fresh volcanic glass was in fact aggregates of very fine grained clay. What had been identified as epidote was in fact pyroxene.

The critics of the evacuation had the following arguments: (1) a general feeling based on extensive experience with active volcanoes; (2) focal depths of earthquakes did not migrate upwards; and (3) chemistry of thermal gases did not indicate the presence of shallow magma.

The committee found that objective, scientific judgement must be based on

factual information. That the seismic array did not allow the accurate determination of focal depth and no information was available which would show migration of earthquake foci. That the only possible indication of the presence of a shallow degassing magma was to be found in the gas analyses of Mr. Tazieff and his coworkers. During a short period the gas analyses indicated appreciable amounts of the high-temperature component sulphur dioxide.

An objective evaluation of the scientific information which led to the evacuation is that it was not sufficiently rigorous on several points which at the time of decision were given high priority. The decision itself was in the hands of the public authorities who in addition to scientific information have to take account of economic and social factors. Furthermore the authorities have to define the acceptable risk which can be highly variable from one situation to another. In Guadeloupe it was decided that the acceptable risk was zero, which gave very little room for further evaluation and practically meant that even the evacuation of 73,000 people had to proceed without the risk of a road accident.

Any criticism of the decision reached has to take account of this most important attitude of the authorities.

It must further be remembered that both scientists and the authorities were working under extremely high tension. When men are strained, inexperienced and faced with an unexpected situation they are likely to make decisions which later prove to be overdimensioned. That is a simple fact of life.

The principal critic of the evacuation, Haroun Tazieff, was not present when the decision was taken. He had left on a mission to Ecuador. When he returned, his criticism, based on the points given above, was widely publicized and became highly embarrassing for his scientific colleagues as well as the French authorities. All of us know that Mr. Tazieff is a popular man and he has good contact with the mass media. Reporters request a statement; they are less concerned with the factual basis on which that statement rests.

The international committee did ask for the factual basis of his statements and found emotional attitudes and misjudgements equally serious as those made by the scientists who in the absence of Mr. Tazieff acted as advisers to the authorities.

During the preparation of a final report in Paris in November 1976, I recall that the committee members were relieved to discover that their findings could not be interpreted in favour of either party. The principal reason why matters got out of hand was the lack of up to date, sophisticated monitoring systems and experienced personnel. Too many easily-obtainable facts were either not available, incorrectly measured, or neglected.

The evaluation showed that the refugees could be moved back to their homes provided (1) that the authorities were willing to accept some risk, (2) that high-quality monitoring systems were installed on the volcano, and (3) that the supervision of collection of data and its interpretation were performed by people trained in volcanology.

A wise and admirably conceived conclusion of the whole Soufrière affair was put forward by Dr. Chabbal, the president of CNRS: the blame for the Soufrière misjudgement did not lie with the scientists. For a number of years they had asked for funds to improve monitoring systems on Soufrière, and to make detailed volcanological studies in the area. Their requests had been turned down. For this reason the necessary background knowledge and expertise was not available at the time of need. Immediate and generous increase in the funding of volcanological research should be the reaction to the unfortunate Soufrière affair.

When the findings of the international committee were made public in Paris, the mass media made a simplistic interpretation of their own: "Tazieff was right". And now I find this same phrase repeated in an "Editorial" of a scientific journal on volcanology: "He was correct, of course. Nothing happened". I sincerely hope that the scientific profession has not degraded to the practise of flipping coins in matters of such concern as the prevention of volcanic hazard.

Today volcanology is emerging as a scientific discipline. Some of us have already experienced hard clashes with unyielding public officials or the embarrassments of false predictions and professional disagreements. This is the price we have to pay and there is no way around it. Nothing will be solved with a deontological code for volcanologists. We will have to learn the hard way, as everybody else before us, who had to deal with matters so highly involved in, and affected by, human behaviour. The Soufrière affair is a stepping stone in our evolution. It was a costly experiment and therefore we should try to gain as much from this experience as possible. That, however, is not possible unless the truth and nothing but the truth is respected.

Let me finish these remarks by paying tribute to the French Research Council for its wise handling of an extremely difficult affair. The open and frank discussions, which finally led to the Research Council itself taking the blame for the incident, can only have happened in a country of great democratic tradition and vast cultural heritage.

They are to be admired.

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