

Dr John Archdeacon (Cairns) offers the following comment on Dr Victor Brand's report:

On considering the awful experience which you bravely laid bare in July's Newsletter, I feel that I can supply a probable solution.

I believe that the first stage valve of your borrowed regulator jammed or became blocked with particulate matter as you tried to inhale. Your inspiratory efforts would have reduced the pressure in the connecting hose to ambient (or lower!) and the second stage valve would have been opened. There would almost certainly have been a small amount of saliva or seawater in your mouth or mouthpiece.

As the ambient pressure decreased during your free ascent from 3 ATA at 60 feet to 1.6 ATA at 20 feet, the corresponding movement of the first stage diaphragm relieved the blockage - allowing the full blast of air at over 100 lbs/in² into the open and unsuspecting second stage valve and oropharynx -blowing some irritant seawater or saliva onto the vocal cords and blasting the regulator out of your mouth before the second stage valve had time to react.

A moderate degree of laryngospasm would account for the symptoms of respiratory difficulty you described, especially when compounded by the effort of supporting the weight of scuba and photographic equipment whilst having the thorax immersed. Once on shore, with the weight and pressure on the chest relieved, a good cough cleared the larynx and cured the distress.

Proof of this hypothesis would depend on two factors which might have been noted when the equipment was checked after the incident, namely the presence of air in the tank and the state of the first stage valve when it was dismantled; unfortunately neither was mentioned in your account. That there was air is almost certain - it is unlikely that an experienced diver, even one being intermittently swamped and electrocuted, would fail to notice the tightening of his set which would occur for several breaths (at a depth of 60 feet) before the tank became fully empty; and something must have exploded the regulator out of your mouth.

The lessons we could learn from your experience would be

- a) borrow ... equipment only from your more cautious friends, who are likely to keep it regularly serviced and are usually reluctant to lend; and
- b) always have all equipment fully checked after any untoward incident - because if this valve is at fault and jams again in circumstances where buddy breathing/free ascent is not possible, an avoidable fatality may well occur.

I cannot resist adding that this is another practical situation in which the much vaunted Octopus rig would not have helped - both second stage valves on your own set being equally affected by the first stage failure, and your buddy's being, as is too often the case with all of us, "close by but outside his reach and not looking at him".

The case could perhaps be classified as Psychotrauma secondary to Equipment Failure.

* * * * *