EXPERIENCES IN THE MOUNTAINS

BY

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Introduction

The Himalayas for ages have formed a part of our history and tradition. We have sanctified our mountains and called them by holy names. With devotion we look to them as—the abode of Gods. Now the time has come to go into them and guard them; not merely worshipping them from a distance. Today our soldiers are scattered on the mountain frontiers at dizzy Himalayan heights.

Mental Stresses

The most fascinating experience is the impact of the mighty mountains on man's mind. Man stands small against gigantic Nature. It is rightly said, "Mountains sort out man". At high altitude man loses all his polish, refinement, sophistication and etiquette; he stands stark naked in nature, in his true colour.

Living in trying conditions, away from home and civilization, with extremes of temperature, biting winds, the terrors of ice-falls, crevasses, the perpetual artillery of avalanches and above all the dreaded wilderness of everlasting eternal snow, it is difficult to adjust one's mind to the environment. There is monotony of life; man is colour-starved and there is the boredom of seeing the same faces over and over again, over a long time.

An experienced mountaineer like Albert Egler, leader of the 1956 Swiss Everest Expedition was once asked, "How do you tolerate the same faces for so many months"? He replied "I wanted to stab every member. The only reason I didn't do it was, what answers shall I have to give to their wives when I return home!" This illustrates the great psychological strain under which one labours in those altitudes. With increasing altitude, tempers become frayed and undue irritability is noticed. In this the effect of hypoxia resembles that of alcohol. Some become melancholic and others become irritable; fellow-tolerance becomes poor. There is often overpowering laziness; will-power and morale begin to dwindle. Because of this some persons become real menaces and are dangerous at high altitudes; they must be brought down.

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FIG. 1

The "Ice Jungle" on Khumbu Glacier 18,000 ft.
the Base Camp of the Indian Mountaineering Expedition of 1960
(Photo by kind courtesy of the Himalayan Mountaineering Institute)

A good communication and postal system is a very great morale builder. I remember, spending some restless nights in the Western Cwm of Everest, where work was held up due to bad weather and there was no news from anywhere. One used to feel lethargic, and miserable. Then suddenly when the mail arrived, morale would shoot up; irrespective of weather, everyone would be cheerful and energetic. It requires great leadership, strong will, sense of discipline, very high morale and motivation to maintain a body of men at high altitude. Frequent visits to lower altitude, good communication, liberal leave and other amenities are a MUST for morale.

Mental aberrations in the form of hallucinations and delusions are common and can be very dangerous at times. The following anecdotes serve to illustrate this :—

> I am sure most of you have heard the story of Brigadier Gyan Singh at the Advance Camp of the Indian Mount Everest Expedition of 1960 at 21,200 ft. A.S.L. helping himself from a bottle of sleeping pills, believing that they were cough tablets being offered to him by a doctor. One of the most experienced Sherpa members of the Indian Mount Everest Expedition of 1960, suffered from mountain sickness, while working on the LHOTSE-face. He returned and slept at Camp IV, 22,400 ft. A.S.L. Whenever he put on his oxygen mask he saw a lady, the Goddess Chomolungma (?) putting her hand on his mouth and sffuocating him. There is an interesting account of the famous late *Nandu Jayal during his KAMET Expedition. He was noticed holding something in his hand, and after every few steps looking back and making some sounds. Later it was found that he thought he was leading a goat up the mountain for nearly an hour.

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FIG 2

Negotiating the Treacherous Ice Fall on the approach to the Western Cwm.

(*Photo by courtesy of the Himalayan Mountaineering Institute*)

These hallucinations, loss of judgement and emotional control, are due mainly to oxygen lack.

It is aptly said that, "Mountaineers are as moody as the monsoons". They have peculiar tastes and cravings. It is logical that smoking in the mountains is unwise; however some cannot do without it People remember Nandu Jayal climbing with a pipe in his mouth. During our '60 expedition a Sherpa member, Ang Thimba, continued smoking even on South Col. i.e. 26,000 ft. A.S.L. On the Chowkhamba I.A.F. Expedition, 1959, when the stock of cigarettes had run out I saw a mountaineer (Flt. Lt. A. K. Chowdhary) smoking tea leaves rolled up in toilet paper in lieu of cigarettes. I wonder if any one has tried this recipe on the plains.

Sex and Fertility

I have noticed that in mountains libido is much exaggerated, while it is known that infertility at high altitude is common due to selective action of hypoxia on germinal epithelium. The same has been confirmed by animal experiments. The exact cause of increased libido is not known.

Solar Radiation

For most people, altitude and cold appear synonymous. At an altitude of 22,000 ft. in the Western Cwm, on a bright sunny day when there was no wind, a high temperature was recorded. Absence of water vapour and the thin air, makes solar radiation at this height very strong.

FIG. 3

Western Cwm, with Lhotse face in front, and walls of Nuptse on right and Everest on left.

(Photo by courtesy of the Himalayan Mountaineering Institute)

One bright sunny morning in April, 1960, whilst moving to Camp IV 22,400 ft. from Camp III, I was dressed in a woollen shirt and a pant and was bare headed. My head was burning hot. I felt dizzy and developed a headache, a condition akin to glacier-sickness. To protect myself against the unbearable hot sun, I collected some soft snow and tied it on my head with a handkerchief and pressed on happily.

However, no one suffered from any other effects of radiation as snow-goggles and glacier-cream were always used.

Cold

Unlike acclimatization to altitude, acclimatization to cold is very limited. Man cannot develop a special winter coat like reindeer. Some winter birds who do not seek night shelter, keep shivering at night, thus increasing their heat production. Unfortunately, in man shivering and sleep are normally incompatible. The Eskimo lives in the micro-tropical atmosphere of his igloo. His adaptation to cold consists mainly in the art of avoiding exposure to cold by proper clothing and shelter. This is also followed in mountaineering expeditions. Apart from the various changes that occur in the skin by vasconstriction and fat deposition thus increasing the insulating property of skin eight to ten fold, the most important factor is that man learns to ignore the painful stimuli of cold from the skin surface. At Delhi on my return from the Everest Expedition I could hold a block of ice in my hand till it melted without any discomfort or pain. This property was retained for about ten days after return from the mountains.

FIG. 4

The author at Camp III 21,200 ft. in the Western Cwm.

It is highly interesting to note that the nature of adaptation to cold differs in various races. According to Scholander[4] some prefer to have warmer extremities and do not mind energy wastage, whereas the Australian aborigines sleeps with cold extremities (foot temperature falling to 12° C without extra heat production and energy loss.) Some Red-sect Lamas of Tibet are said to possess an occult art of voluntarily stimulating the heat centre and this increases heat production of body "*tumbu*[4]". It is believed that some Indian "Sadhus" who live nearly naked at high altitude, sleep soundly at night, but show continuous fine fibrillation of various muscle fibres, thus increasing heat production[1].

During the 1960 Indian Mount Everest Expedition, members used nicotinic acid tablets above 22,000 ft. to prevent the danger of frost bite due to very high wind-chill factor.

Dehydration

It is a real hazard of high altitude and is due to :—

a) excessive loss of water vapour from lungs caused by very rapid breathing.
b) non-availability of water.
c) sweating due to strenuous physical exercise and high sun temperature.
d) low relative humidity (coupled with increased pulmonary ventilation)

The 1960 Indian Mount Everest Expedition had few cases of dehydration among Sherpas who just refused to understand the importance of drinking adequate amounts of water in a cold climate. As Tenzing says, it is a popular belief in Sherpaland that 1953 Everest Expedition was successful due to "*nimbu pani*" which all members and Sherpas consumed in large quantities. It should be emphasised that it is not the *nimbu* (lemon) but the *pani* (water) which is important. Mountaineers must always carry lemon crystals and various other types of dried fruit extracts which when mixed with water, make a palatable drink. In any case beyond altitudes of 24,000 ft. or so one lives on fluids mainly.

Food and Nutrition

On the approach march and upto 18,000 ft. acclimatized people have good appetites and eat well, 5,000-5,500 Calories/day. Freshly cooked food is preferred to tin-food. Freeze dried food is the ideal in the mountains. At high altitudes, physiologically, a high carbohydrate diet is the best, as carbohydrates require least oxygen for combustion. Apart from the highly concentrated calorific and vitaminised food, the most important requirement is the taste. Spicy Indian dishes and pickles are always welcome at any altitude. At 21,200 ft. at the Advance Base Camp of our expedition, the diet consisted of rice, chapati, dal, eggs, meat etc. However, appetites were poor and the average consumption was roughly 3,000 Cal/day.

On the return journey I found that appetite increased enormously and all members ate voraciously, three to four times more than the normal diet. The same has been

observed in all other Expeditions. The amount of food consumed is far more than can be explained by the body weight regained. This may be due to increased thyroid activity.

Dry Cough

Dry cough is the most common complaint in the mountains and starts at comparatively lower altitudes. During our expedition, even fully acclimatized members kept coughing at Base Camp, 18,000 ft. With increasing altitude distressing and irritating, dry cough persists. This is due to the rapid breathing of cold and dry air. At 26,000 ft. over the South Col, of Everest, a man walking slowly breathes ten times faster than normal. The nose affords an insufficient air inlet: one breathes through the mouth and thus the throat becomes dry and irritable.

It is interesting to note that the 23 members and 50 Sherpas of our expedition consumed about 10,000 cough lozenges and roughly about 60 lbs. of various syrups. Brigadier Gyan Singh started a new idea. During the acclimatization run, he tried wearing an oxygen mask without any connections and found it very useful. It formed a small moist micro-atmosphere, where the vapour of exaled air condensed and humidified the inhaled air in turn. This considerably reduced the cough. This however was useful only upto 20,000 ft. Beyond that moisture immediately froze and blocked the valves of the mask.

Mountain Sickness

This new occupational disease has suddenly come into prominence in recent years; it affects not so much the residents of high altitude but visitors. Upto 10,000 ft. the effects of altitude are fully compensated, except for rapid breathing and for a slight fall in night vision. It is at 12 to 15,000 ft. that one begins to feel the effects of altitude.

The commonest symptoms of mountain sickness are frontal headache, loss of appetite, nausea, vomiting, muscular weakness and insomnia. In our 1960 Expedition a few members suffered from these mild symptoms at 13,000 ft. at PANGBOCHE and responded well to symptomatic treatment. After 18 days of approach march and three weeks of acclimatization, when the team came to the base camp at 18,000 ft. A. S. L., except the Liaison Officer, no one suffered from mountain sickness. Everyone kept very fit and ate well and some actually put on weight.

The Liaison Officer proved a very unusual case of sudden fainting. He was a young healthy man with no prior mountaineering experience. He never went out climbing during the acclimatization period. On first day of his arrival at the Base Camp he had headache, nausea, and anorexia, which were all treated symptomatically. Next morning he was found banging his head against the tent-pole with a dazed vacant look and was unable to speak. He was brought out of the tent, and he suddenly fainted. He was put on oxygen and evacuated to lower altitude. At 17,000 ft. after 8 hours he

recovered consciousness, but remained stuporose throughout the night. All along, oxygen was continued at 2 litres per minute. Next morning he was evacuated to rest camp at LOBOJE at 16,000 ft. where he became perfectly normal. The exact cause of this sudden attack could not be ascertained.

In my limited mountaineering career I have noticed that people who are robust, tough, and physically fit, with a good vital capacity are not necessarily fit at high altitudes. Good physique and good climbing skill have nothing to do with man's ability to stand the hypoxia of high altitude. I had the unique opportunity of staying in the Western Cwm for the record period of 24 days at a stretch, in the so-called deterioration zone. I apparently kept very fit, eating well, sleeping well and kept quite busy during the day, skiing in my spare time. At the fag end of my stay, I went up to Camp V, 24,600 ft. in support of our summit party. When I returned to the base I was only 95 lbs. I still remember the rattle of my wobbling knees. But one must remember that all symptoms of high altitude are well masked with good acclimatization. One can carry out his mission over a protracted period. Beyond this altitude there is fast deterioration and the mountaineer should be exposed to it for the minimum time.

Let us learn from Nature. Take our expedition dog, Tashi. He would not eat much at Base Camp. But after every 3-4 days he used to go down on his own to LOBOJE Rest Camp 16,000 ft. for a day or two recuperate and come back. That is exactly the principle of acclimatization and that is what mountaineers do.

FIG. 5

Tashi the Expedition's dog Recuperating at Base Camp.
(Photo by courtesy of the Himalayan Mountaineering Institute)

Oxygen

Below 22,000 ft. oxygen is of little value except for treatment of patients. Beyond 24,000 ft. oxygen has proved a great boon to the mountaineer. An acclimatized person with oxygen cannot be restored to his sea level condition but oxygen greatly improves his performance and acts as a definite altitude reducing factor. It increases the climbing efficiency and reduces fatigue, and one enjoys climbing and takes an interest in the surroundings. During our 1960 attempt on Everest, about 40 Sherpas and Capt. Jangalwala went to South Col. 26,000 ft. without oxygen, and many lived there for two days without oxygen. People are contemplating climbing Everest without oxygen. It is very doubtful if man can stand that strain. Will Nature provide him the time? More than double the time is required without oxygen. Mountaineering is a sport for enjoyment and there is no enjoyment at those heights without oxygen.

FIG. 6

Members of the Everest Expedition on the return march.
(Photo by courtesy of the Himalayan Mountaineering Institute)

Conclusion

We have known of the permanent mining settlement at ACONQUILCHO at 17,500 ft. A.S.L. in the ANDES where people live without any ill effects. There are villages in Tibet where people live in wind-swept plateau at 18,000 ft. apparently without any ill effects of altitudes.

There is no yard stick to measure human endurance and capability. I have no doubt in my mind that if our soldiers are properly equipped, acclimatised and are properly led, they will live happily in Himalayan heights and stand to any altitude to guard our mountain frontiers.

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