fluid frothy magma rises and stands at high level in the conduit, but generally below the surface[7]. Due to the greater viscosity of the moderately fluid magma, gas escapes less readily from it than in the case of fluid magma of Hawaiian activity. During the rise and temporary stay of the magma at shallower level, this obviously allowed rapid formation of separate gas phase, accumulation of gas-bubbles, expansion of bubbles and in turn fragmentation of frothy magma resulting in explosion and ejection of clots of solid and partly molten fragments of lava and magmatic gases. The gas thrust part indicates rapid decompression of the gas phase, whereas the overlying eruptive column indicates incorporation of atmospheric air into the decelerating and less dense eruption clouds higher up in the atmosphere[9]. The phenocryst-rich fragments indicate that the magma was in an advanced stage of crystallization[10]. The spherical fragments possibly achieved roundness during travel in the air. Thus they appear to be partly molten and in turn a product of volcanic action and not of the disruption during eruption[9].

The Andaman Sea represents a back arc basin formed by transtension[11] and lies along an oblique convergent margin showing deformation and destruction of the Indian plate below Burma microplate along the Andaman–Java subduction. Dasgupta and Mukhopadhyay[12] showed a seismic gap between 90 and 100 km depths in the Andaman Benioff zone and its spatial relation with volcanism on Barren Island. This gap implies partial melting of the Indian oceanic lithosphere under upper mantle condition and generation of magma for the current Barren eruption. Partial melting and dehydration of the ocean floor sediments and serpentinite (dehydrated peridotite) possibly produce the hydrous basaltic magma rich in dissolved $H_2O$ and $CO_2$. Due to its lower buoyancy, the magma moves upward and under rapid decompression at shallower level of the crust is changed into a volatile-rich frothy magma subjected to explosive fragmentation from a subaerial open vent.


1. Ravi Shanker, Halder, D., Absar, A. and Chakraborty, S. C., Geological Survey Special Publication, 2001, 67, pp. 1–87.
2. Hobday, J. R. and Mallet, F. R., *Mem. Geol. Soc. India*, 1885, **21**, 251–286.
3. Halder, D., Lasker, T., Bandopadhyay, P. C., Sarkar, N. and Biswas, J. K., *J. Geol. Soc. India*, 1992, **39**, 411–419.
4. Halder, D., Lasker, T., Bandopadhyay, P. C., Sarkar, N. and Biswas, J. K., *Indian Mineral*, 1992, **46**. 77–88.
5. Halder, D., Chakraborty, S. C. and Chakraborty, P. P., *Rec. Geol. Surv. India*, 1996, **129**, 59–62.
6. MacDonald, G. A., *Volcanoes*, Prentice-Hall Inc, New Jersey, 1972, p. 493.
7. Schmincke, H. U., *Volcanism*, Springer Verlag, Berlin, 2004, p. 324.
8. Spark, R. J. S. and Wilson, L., *J. Geol. Soc. London*, 1976, **132**, 441–451.
9. Cas, R. A. F. and Wright, J. V., *Volcanic Successions, Modern and Ancient*, Chapman and Hall, London, 1987, p. 528.
10. Bandopadhyay, P. C., *J. Asian Earth Sci.*, 2005, **25**, 97–108.
11. Curry, J. R., *J. Asian Earth Sci.*, 2005, **25**, 187–232.
12. Dasgupta, S. and Mukhopadhyay, M., *J. Geol. Soc. India*, 1997, **49**, 513–521.


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## NEWS

# Self-employment for self-sufficiency

India is a vast country (3,287,240 km$^2$ area) supporting a population of more than 102 million. This population pressure is increasing at an alarming rate, resulting in unemployment in the society.

To help unemployed youths become self-sufficient, there are several self-employment opportunities.

Detailed information on the uses, requisite raw materials, capital investment, etc. can be obtained from various departments of State governments like rural development, industry, fishery, agriculture, etc. The Council of Scientific and Industrial Research, Central Drug Research Institute, Central Leather Research Institute and many other institutes also provide schemes towards self-employment at the national level. Some of the departments also provide loans to interested beneficiaries and thus one can become self-sufficient by setting up his/her own factory. However, there is a need for awareness and dissemination of information on such self-employment opportunities through various mass media, among the unemployed youths.

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