nature of the breccia in Salal area is documented by photomicrographs[7]. Siddaiah and Kumar admit that they have not studied the chert breccia at Salal village. They also misunderstood the remark 'rhyolitic character of chert breccia remains unrecognized'[8]. It was meant to imply that although the presence of rhyolitic tuff and agglomerate was recorded in 1979, later workers have ignored this report and did not take up specific follow-up studies.

The Sindkhatauti ash bed with vertebrate remains from Kalakot area, Jammu, is accepted by Siddaiah and Kumar to correspond to the 'top most part of the Subathu Formation', which corresponds to Late Eocene age. Volcanic beds of Eocene age occur at different levels of the Subathu and equivalent formations from the HFB[1,2,8]. Their nature mostly different from the Kalka ash bed notwithstanding, they are equally important proxies to understand the nature of volcanism and tectonism associated with the Himalayan collision.

Thus the rhyolitic chert breccia from the Salal area, Jammu, associated with bauxite is Late Palaeocene in age[7,8] and represents the oldest tuff–agglomerate horizon from the Subathu Formation. The Kalka ash bed associated with coal seams, occurring at a higher stratigraphic level is younger and cannot be named as 'Basal Subathu Tonstein'.

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A simple and economical device to save water in water distillation systems in laboratories

A serious problem currently faced by the world is water crisis. Due to the enormously wasteful and therefore, non-sustainable use of water by us, groundwater levels are decreasing at an alarming rate. The water distillation units used in almost every science laboratory, need running water to cool the steam and thus provide distilled water. The quantum of running water typically allowed to flow down the drain in the usual glass or steel distillation units can be almost 800–1000 litres for every 10 litres of distilled water produced. We describe here one simple device which can save many hundreds of litres of water everyday from going down the drain during production of distilled water (or other distillation products).

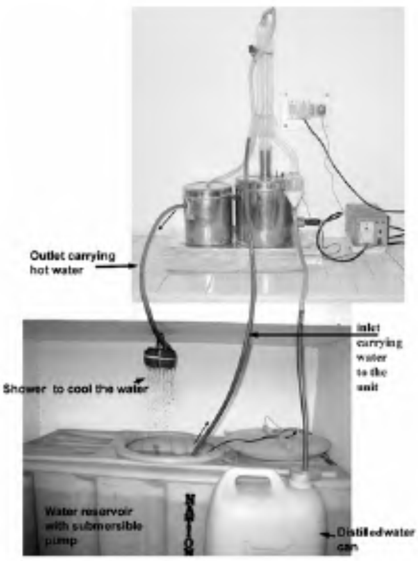

Figure 1. Distillation plant assembly.

We use a typical water storage tank (300 litres capacity) with a small submersible pump (commonly used in room coolers and costing between Rs 120 and 150) to force the water to flow through the condensing unit. The water flowing out of the condenser returns back to the same tank, but through a perforated disc (4–6″ dia) positioned over the wide mouth of the tank at a height of 12 inches or more, so that the water flows through the perforated disk like a shower. This allows the water to be cooled as it falls into the storage tank and is thus suitable for recirculation (Figure 1). In this way, no water is wasted and since it gets sufficiently cooled, it does not compromise with the efficiency of the condensing unit. We have used this system in our laboratory continuously for 8–10 h every day, with the ambient temperature being 40°C or more. After the distillation unit is turned-off in the evening, the water circulation system is allowed to continue for an additional 4–5 h so that the water in the tank gets fully cooled for next round of distillation. The water in the storage tank may be used at least for a week without replacement. Only when it accumulates organic and inorganic load, it may be replaced. Larger diameter of the shower disc, its placement at a greater height and a larger reservoir can increase the cooling efficiency. The water-cooling efficiency, however, may be affected under conditions of high humidity (e.g. during monsoon months).

Thus 800–1000 litres of tap water may be saved for every single distillation unit everyday. Given the universal requirement of one or more distillation unit/s in classrooms and research laboratories, addition of a simple and economic device like this can save millions of gallons of precious water everyday.

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