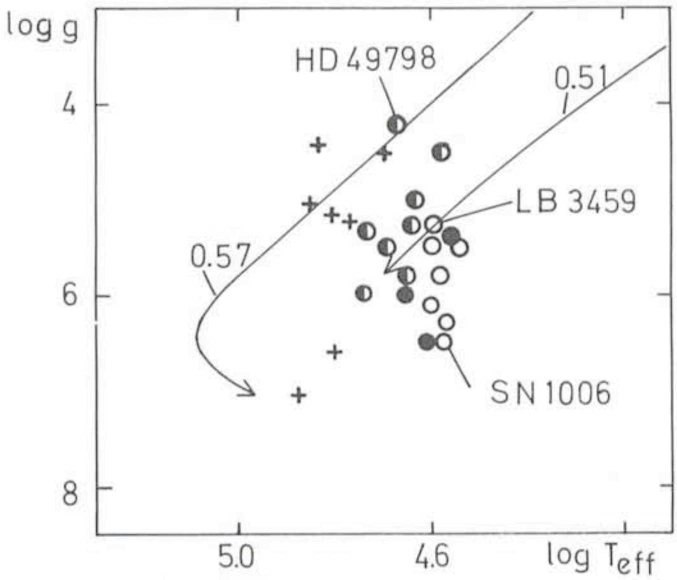

Fig. 6: *The (g, T_{eff}) diagram of subdwarf O stars, the equivalent to the conventional Hertzsprung-Russel diagram. The helium poor sd OB stars are marked by open circles. The supernova remnant suspect SN 1006 as well as the close binary star LB 3459 are also sd OB's. The extremely helium rich objects have full circles, while the intermediate helium rich have half filled circles. Crosses denote the locations of 7 recently analysed central stars of planetary nebulae. The evolutionary tracks belong to stars with 0.51 and 0.57 solar masses (Sweigert et al., Schönberner) that evolve from the horizontal branch to the white dwarfs.*

A further problem arises from the mass. For some sdO's fairly reliable distances exist and hence luminosities. From the effective temperature and gravity, the mass can be derived. For single sdO's the mass turns out to be 0.5 $M_{\odot}$. How can a star with that little mass have evolved, without having experienced a substantial mass loss?

The scenario may be the following: stars with masses of more than say 1.2 $M_{\odot}$ lose mass at the top of the first giant branch, at a rate which in some cases may be much stronger than the usually accepted wind – possibly through the helium flash which, after all, is not as harmless as one thinks? After mass ejection the stars are found on the horizontal branch: some with little mass left ($\sim$ 0.5 $M_{\odot}$), on the blue side – these are the helium rich stars – and some with larger masses ($\sim$ 0.8 $M_{\odot}$), on the red side – they have normal photospheric composition. The red HB stars have enough mass left in their outer shell to climb up a second time the (now asymptotic) giant branch, at the top of which they expel a shell, the planetary nebula. The evolution is described in Fig. 6 (Schönberner, 1979). The track with 0.57 $M_{\odot}$ beautifully matches the position of 6 recently analysed central stars of planetary nebulae – these are the first direct spectral analyses, without recourse to the Zanstra method (Méndez et al., 1981, Kudritzki et al., 1981). The majority of white dwarfs also have 0.57 $M_{\odot}$. The blue helium rich stars have too little mass left in their shell. They do not reach the asymptotic giant branch and hence are not capable of ejecting a shell. They reach the position of the sdO's on a track which is sketched according to Sweigart et al. (1974). They are likely to form the low mass component of white dwarfs.

If this scenario is correct, then the switch, whether planetary nebula or subdwarf O star, is turned at the top of the first giant branch.

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