

FG SAGITTAE AND s-PROCESS NUCLEOSYNTHESIS

The peculiar variable star FG Sagittae presents a great opportunity to us to derive important properties of internal structure. This object, first photographed in 1894, has several peculiar properties. According to Herbig and Boyarchuk (*Ap. J.*, **153**, 397, 1968) this object has ejected a planetary nebula nearly 3,000 to 6,000 years ago. The planetary nebula has a dimension of 18 arc seconds. The second important property is the increase in brightness in the interval 1894 to 1965 from $m_{pg} = 13.6$ to $B=9.7$. The brightness increase continued until 1971 after which a decline by $0^m 2/yr$ has set in (Langer, Kraft and Anderson, *Lick Observatory Bulletin*, no. 653, 1973). Further, the spectral type has changed very rapidly. From a B4 supergiant in 1955 it has become F6 Ia in 1972. A major discovery lately has been the increase in the surface abundances of s-process elements (Y, Zr, Ce, La, Nd, Sm) by a factor of 10 to 30 (Langer et al, 1973). The abundances of C and Fe relative to H have roughly remained constant.

The above observations have activated a lot of theoretical studies. The earlier interpretation in terms of the formation of a second planetary nebula (Herbig and Boyarchuk, 1968) is ruled out by further observations (Langer et al, 1973). The suggestion by Paczynski (*Acta Astronomica*, **20**, 47, 1970) of a thermal instability in the post red-giant phase seems

We Hear That

Professor G. Swarup, Tata Institute of Fundamental Research, Bombay, has been awarded Jawaharlal Nehru Fellowship.

Professor K. D. Abhyankar, Centre for Advanced Study in Astronomy, Osmania University, Hyderabad, and Professor T. K. Menon and Professor J. V. Narlikar, both of the Tata Institute of Fundamental Research, Bombay, have been elected Fellows of the Indian Academy of Sciences.

Professor P. L. Bhatnagar has become a member of the Union Public Service Commission. □

to be the most favoured interpretation; the detailed models of the repeated helium flashes, which the thermal instability involves, are being worked out by several groups (Sackmann and Despain; Sackmann, Smith and Despain; Ulrich—all Orange Aid Preprints during 1973; Langer et al, 1973), to test this hypothesis.

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NOTED IN PASSING

D. E. Cartwright (*Nature*, **248**, 656, 1974) has contradicted the widespread reports in the popular press about the forecasts of unusually large tides in January and February 1974, and has given likely dates between 1 to 4000 A.D. for the occurrence of peak tides.

A modified 'Project Ozma' has been initiated by P. Feldman and A. Bridle (*Nature*, **249**, 106, 1974), who will begin a programme of 'listening' for signals from our Galaxy, with the help of 150-foot Algonquin radio telescope at frequencies appropriate to emission from water.

R. S. Wojslaw and B. F. Perry (*Bull. Am. Astro. Soc.*, **5**, 443, 1974) have identified in the violet spectrum of 19 Psc, for the first time in molecular spectra, molecular bands of CuH, ZnH, GeH and SnH. This indicates that the abundance of Cu, Zn, Ge, and Sn are highly enhanced in the atmosphere of this star, and this may be due to s-processing. □

Astronomical Events

In March 1974, a digital star changing device has been installed for the 104-cm telescope of the Uttar Pradesh State Observatory. It enables easy transfer from one star to another as per programme punched on a tape. The star changing process is actuated by pressing a push button on the main console. The system has 200 extra relays which can be used for operating other automatic observational equipments. □