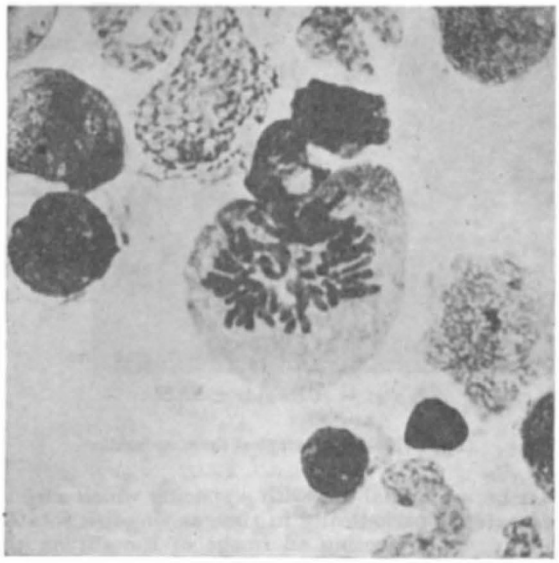
Human Chromosomes

In connexion with Dr. Śliżyński's note[1] on the human chromosomes in bone marrow cells, obtained by a sternal puncture, I wish to direct attention to a paper published by F. A. Saez and me in 1934[2]. In this paper we give details of a method of extracting bone marrow by a sternal puncture in order to investigate the human chromosomes, and we conclude that "as to the staining, we obtained good results with May-Grünwald-Giemsa, but other methods may also be used, as—for instance—fixation with osmic acid vapour of the fresh smears, and staining with hæmatoxylin".



Reproduced herewith is a copy of a photomicrograph of our preparation, made in 1934.

M. E. Varela.

Faculty of Medicine,
Institute of General Anatomy
and Embryology,
University of Buenos Aires.
June 21.

[1] Śliżyński, B. M., *Nature*, **155**, 427 (1945).
[2] Varela, M. E., and Saez, F. A., *Rev. Soc. Argent. Biol.*, **10**, 421 (1934).

Duration of Life of Woodlice

Some little time ago I published a note on the duration of life of certain species of woodlice[1] which had been studied by Major Stanley S. Flower and me, and it was there recorded that Major Flower had kept a specimen of *Oniscus asellus* Linn. (born in captivity) for approximately 4 years 8 months and 28 days or possibly 4 years 9 months 20 days. My own record for this same species was 4 years 3 months 2 days.

Major Flower has now very kindly sent me a female specimen of this species, 18·5 mm. in length, which was born in captivity between June 13, 1940, and August 31, 1940, and died on August 16, 1945. This specimen was thus certainly 4 years 11 months 16 days old and possibly 5 years 2 months 3 days. Apart from the record for *Platyarthrus hoffmanuseggi* Braudt[1] which I kept alive, in captivity, for 5 years 2 months, these constitute the only records I know of where these isopods lived for more than five years.

A further interesting point in Major Flower's letter is the following. Speaking of the above-mentioned specimen he writes, "I have looked at it every day and on August 15, 1945, it appeared to be quite healthy . . . and it was very tame and appeared to enjoy my stroking it with a finger".

Walter E. Collinge.

The Hollies,
Fulford Road, York.

[1] *N. West. Nat.*, **19**, 113 (1944).

Steam Tables and Steam Power

In a recent review of "The 1939 Callendar Steam Tables"[1], Dr. H. Heywood concludes by saying that "these tables . . . should meet the requirements for many years of engineers concerned with the design and testing of steam power plant or of heating and ventilating systems". In the light of recent advances in technology and metallurgy this may be thought to be an optimistic forecast. Boiler plant design during fifty years has been consistently ahead of the accurate thermodynamic data upon which it should be based, and the 1939 steam tables can only be said to have caught up with modern practice, leaving little margin for further development in the direction of improved power-cycles.

In our view there are important theoretical considerations which point to an immediate need for extending the data into the unexplored area of the temperature-entropy plane bounded by the temperature range 600°–1,600° F. and the entropy range 1–1·5 B.Th.U. per lb. deg. Fahr. Thus, although a direct extrapolation of the enthalpy data gives no indication of any change in the trend of the pressure-enthalpy relation in this region, the corresponding data calculated from a reduced equation of state indicate the occurrence of a pronounced minimum. The van der Waals' equation, for example, leads to a minimum value of enthalpy when

$$\frac{8t_r}{(3v_r-1)^2} - \frac{6}{v_r^2} = 0;$$

which for steam gives the following values of volume and pressure at three selected temperatures:

Temperature (° F.)	Volume (cub. ft./lb.)	Pressure (lb./sq. in.)
980	0·029	14,000
1340	0·032	19,500
1700	0·035	29,500

The accuracy to be expected from any simple equation of the form $p_r = f(t_r, v_r)$ in the region delineated is, however, not great, and from the point of view of defining conditions for maximum theoretical efficiency direct observations are required.

There should be no insuperable experimental difficulties in exploring this region, since although high pressures are involved the corresponding specific volumes are small. Moreover, the advantages to be derived from the possibility of passing, without phase separation, from supercooled liquid to superheated vapour are considerable, particularly in respect of heat transfer.

D. M. Newitt.
N. R. Kuloor.

Imperial College of Science and Technology,
London, S.W.7.

[1] *Nature*, **156**, 462 (1945).