of Eurasia for 70 years before this.

My collection includes observations from Russian, Ukrainian, Polish and Armenian sources, as well as some German ones and an English text recounting that Patrick Gordon, a general and rear-admiral in the service of Peter I, saw the great aurora in Kiev on 1 June 1685. Only a fraction of these sources are known to historians of geophysics, much of the information having been derived by Yu. A. Mytsyk, of Dnepropetrovsk University, and myself from antique publications and manuscripts.

Scientific observations in Russia date back to 1725, but the tradition of chronicle-writing seems to have failed in the mid seventeenth century. But in that period several new sources arose: Ukrainian chronicles, which appeared at a time of national revival; Siberian annals owing their origin to a rapid Czarist expansion to the East and the foundation of autonomous Siberian cultural centres such as Tobolsk and Tomsk; and new Russian translations of West European records, the originals of which may be lost.

This last category includes the early periodicals (*Zeitungen, Anzeigen, Berichten* and so on). Muscovite commercial and diplomatic agents gathered information from these sources and sent it to Russia. A single hand-written copy of *Vesti-Kuranty*, compiled at the Czar's court, has been preserved in Russian archives, recording German, Danish, Swiss and Hungarian aurorae otherwise unknown to West European scientists.

Russian sources record 57 (perhaps 61) auroral phenomena from 1645 to 1715. Schröder[1] thinks there were 110 (perhaps 130) cases in Central Europe, and the late Professor M. Keimatsu's collections contain 26 observations from the Far East. All in all there are 193 (perhaps 217) cases, eight of which coincide (for example, one aurora was seen simultaneously in Chernigov and Kyoto).

During the 70 years, about 185 (209?) aurorae were noted, an average rate of 2.8 (3.0?) a year. This is similar to the typical rate of aurorae now seen in Moscow or Berlin. We can conclude that the term Maunder minimum should be placed between inverted commas when it refers to auroral activity.

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1. Schröder, W. *Nature* **335,** 676 (1988).
2. Eddy, J.A. *Science* **192,** 1189 (1972).

Scientific Correspondence

Scientific Correspondence is intended to provide a forum in which readers may raise points of a scientific character. They need not arise out of anything published in *Nature*. In any case, priority will be given to letters of less than 500 words and five references. □

Lateral preference and longevity

SIR—Longevities of right-handed and left-handed baseball players have been compared[1,2] unadjusted for birth date. To obtain a potentially more accurate paired comparison, I treat each birth year as a cohort. I have included players born up to 1922 classified by throwing hand (as in ref. 2) and use 'R–L' to designate the mean longevity of right-handers minus that of left-handers within each birth year.

R–L has a higher variance towards the earliest and latest birth years because these contain the smallest proportion of the 4,479 deceased players[3] studied. To obtain a homogeneous variance as assumed in regression, successive R–L estimates were combined into groups, beginning at the first year, until each group included at least 25 left-handers. (Left-handers comprise 18 per cent of the player population and therefore contribute most of the variance.) The resultant 23 groups each included 25 to 50 left-handers. The mean birth date and R–L for each group were the averages weighted by the number of left-handers in each birth year.

Using this grouped data, the mean R–L is zero but there is a significant ($P<0.01$) negative linear regression of R–L on birth date, B: R–L = 3.36 − 1.38 B where B is (birth year − 1868.54)/10.

Obviously, R–L cannot decline indefinitely. It is plausible that stress factors[1] or discrimination against sinistrals decreased left-handers' longevity historically. Our lifespan has presumably been genetically selected for good reproductive fitness. There would, therefore, have been selective pressure to evolve a linkage between left-handedness and a factor for increased longevity, partially offsetting the lower longevity otherwise associated with left-handedness.

If such linkage exists, removal of handedness-related stresses in modern times would have shifted R–L from positive to negative, just as the preceding regression equation implies. According to this hypothesis, R–L would approach a negative value asymptotically as handedness-related stresses decrease at various rates. Therefore, an asymptotic regression[4] was fitted:

$$\text{R–L} = \underset{(\text{s.e.} = 1.22)\ (P<0.01)}{-3.73} + \underset{(\text{s.e.} = 2.60)\ (P<0.01)}{8.69} \times 0.67^{b}$$

Right-handers born before 1890 had an advantage. Thereafter, left-handers had an advantage asymptotically approaching 3.73 years. Without extrapolating, left-handers' advantage was estimated at 2.1 years for those born in 1910, with 95 per cent confidence limits of 0.4 to 3.8 years. Presumably this relationship holds generally, rather than resulting from the players-selection process or a fluke. The advantage of being left-handed parallels the advantage of being female in affluent societies, and I suggest these have a similar evolutionary explanation. According to my hypothesis, it is predicted that left-handers will be found to have greater longevity than right-handers among Americans on average; conversely, sinistrals' longevity will be lesser in countries with low and approximately equal male and female longevities still prevailing.

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1. Halpern, D.F. & Coren, S. *Nature* **333,** 213 (1988).
2. Wood, E.K. *Nature* **335,** 212 (1988).
3. Neft, D.S. & Cohen, R.M. *The Sports Encyclopedia: Baseball* 8th edn (St Martin's Press, New York, 1988).
4. Snedecor, G.W. & Cochran, W.G. *Statistical Methods* (Iowa State University Press, Ames, 1967).

Dating of the Ugarit eclipse

SIR—De Jong and van Soldt[1] have reanalysed clay tablet KTU 1.78 found in Ugarit in 1948 and suggested that the text on the tablet pertains to a solar eclipse which occurred in the second millennium BC. As Walker[2] has already pointed out, their dating is speculative. In addition to Walker's assyriological reservations, an objection on astronomical grounds is also necessary.

The text refers to a phenomenon which may very well be interpreted as a solar eclipse: (Obverse) "On the ... day of the new moon in (the month) hiyaru the Sun went down, its gate-keeper was Ršp"; (Reverse) "Two livers were examined: danger". Tacitly de Jong and van Soldt assume that the eclipse was total, though this is by no means clear from the text. The Ugaritic terminology is not sufficiently well known to identify the term "the Sun went down" as a total eclipse; it might have been a partial eclipse. The 'gate-keeper' Mars in the text does not help to clarify the situation either, because its occurrence might just be the result of an astrological calculation or of a connection of the planet with a certain month or year. It is interesting to note in this respect that the only preserved material related to tablet KTU 1.78 consists of two fragments of almanacs and one astrological text.

The last possible reason for considering the eclipse text to refer to a total eclipse is its mere survival. The assumption is often made that when only a few records of solar

1. De Jong, T. & van Soldt, W.H. *Nature* **338,** 238–240 (1989).
2. Walker, C.B.F. *Nature* **338,** 204–205 (1989).
3. Newton, R.R. *The Moon's Acceleration and its Physical Origins*. vol 1. (John Hopkins University Press, Baltimore, 1979).
4. Bruch, H. *Chronographia Johannis de Beke* (Martinus Nijhoff, Gravenhage, 1973).
5. Mostert, R. *Quart. J. Roy. astr. Soc.* **30,** 113–114 (1989).