which left us with only nine deaths in the high-risk control group, instead of the 20 expected.

We are taken to task for reporting that on the most favourable view possible of our results, that is when the refusals are grouped with controls and using a one-sided significance test, the difference between the number of deaths in the two groups does not reach the conventional level of statistical significance. It follows that if this difference is not statistically significant, no other can be. We are left with the balance of probabilities in favour of surveillance. Calculations like Bland's show that the mortality rate in Sheffield is now so low that, on present figures, an intervention trial with a 90% chance of success would take 20 yr to complete.

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Circular structures of large scale and great age on the Earth's surface

Saul[1] recognises large circular structures on the Earth's surface. We broadly agree with him as to their nature but must point out that such circular patterns have been described before. The existence of similar structures was demonstrated at the Geological Society of London in 1964, after the presentation of a paper by Kellaway entitled: Structural rings and fissure systems in relation to river development[2]. Detection of the ring structures (called non-volcanic cycloliths) was achieved initially from detailed topographical maps, later supplemented by aerial photographs and geological information, while the presence of spiral joint patterns within some non-volcanic cycloliths was noted by Durrance[3] and the coincidence between joint and drainage patterns later confirmed[4]. We are currently compiling a map of the British Isles showing the position of the non-volcanic cycloliths so far recognised.

Some British non-volcanic cycloliths are sufficiently well defined topographically to be recognisable even in the geological map of Great Britain[5]. An example, with a diameter of about 50 km, is that at Chipping Norton (centred at National Grid Reference SP 2525). This area consists of dissected plateaux of Inferior and Great Oolite limestones, where the underlying Lias is exposed in the valley floors. Erosion has clearly followed a general circular pattern, picking out a fracture system of the same configuration.

We agree with Saul that some of the non-volcanic cycloliths could owe their origin to meteorite impaction at a very early date in the Earth's history, but a possible cyclolith of relatively recent age is the Richat structure in Mauritania[6]. Also the possibility that some owe their formation to an internal mechanism cannot be excluded.

Whatever their origin it is clear that cycloliths may be of fundamental importance to the assessment of many geological processes affecting the Earth in the last 4000 Myr.

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Saul replies—The circular features which I described[1] are common on the North American continent and probably have a worldwide distribution pattern. It is expected and desired that these structures, now that they have been characterised, should be recognisable and of use in reinterpreting earlier geological observations and in carrying out future work.

The structures of Kellaway and Durrance[2] are "circular or elliptical"[3] and were recognised by jointing and drainage patterns only in areas of relatively flat-lying sedimentary cover. Although the descriptions are far from identical, it is possible that the structures of Kellaway and Durrance belong to the same class of feature as the circles I described, and that the differences are due to aspects of the local geology and topography. I have previously speculated that the (easternmost) long curved water course shown in the rather flat northeastern section of Fig. 1 of my original paper[1] was part of "a circular rim with negative topography". This water course should perhaps be compared in detail with the Chipping Norton structure, whose existence and general circularity are not in doubt.

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Timing of continental growth and emergence

Windley[1] cogently summarises evidence based on crustal thickness and on the existence of major sedimentary basins of early Proterozoic age to counter the arguments of Hargraves[2] purporting that continents did not emerge from the sea until ~1,400–1,000 Myr ago. Indeed, the oldest known terrestrial sediments, namely the ~3,800 Myr-old Isua supracrustal sequence of West Greenland, contain major conglomerate horizons and boulder beds[3–5], indicating the presence of land.

In my view, however, Windley[1] overstates his case by suggesting that "there is increasing evidence that the growth of the present-day continents, both in terms of surface area and thickness, was probably almost complete by 2,500 Myr ago". He quotes isotopic evidence ranging from ~50% to 100% for proportion of present-day continental crust already in existence 2,500 Myr ago, but arbitrarily prefers the second value. Without wishing to denigrate the importance and worldwide extent of the ~2,800–2,500-Myr continent-forming event, which I have frequently emphasised (for example, ref. 6), I believe it to be premature to propose that continental growth was all but complete by 2,500 Myr ago. The two extreme estimates are, of course, contradictory and would lead to quite different hypotheses for continental evolution.

Windley's proposal implies that since 2,500 Myr ago the rate of destruction of continental crust has equalled its rate of formation and that subduction-related processes have effectively and completely mixed continental crust with the mantle, so that the resulting homogeneous mixture presumably forms the source for new continental crust. This view is favoured by some geologists[6,8], whereas others prefer the view that continental crust has been produced by irreversible differentiation of the mantle