Since the equation of the profile is not known (it is very approximately a simple sine curve), the equation of the surface and that of the corresponding minimum surface over the square boundary cannot be compared directly. The surface can, of course, be easily produced by blowing up a soap film over a square opening, but the determination of contours on such a film calls for somewhat delicate experimental arrangements (cf. Griffith and Taylor, J. Inst. Mech. Eng., No. 1, 1918, p. 755). The error is probably not great if a very thin rubber membrane is blown up with low pressure, and I have carried out this experiment and drawn the contours, which are shown in Fig. 2. They are curvilinear and approximate to circles the more the apex of the surface is approached. While there is a certain resemblance between the surfaces produced by drying polyhedra and minimum surfaces over the same boundaries, the two are, therefore, certainly not identical.

A rational treatment of the problem does not appear hopeful, as two questions of very great difficulty are involved. It would be necessary to find the law according to which the water content varies from place to place, and then to deduce the conformation from the relation between water content and the elastic constants. Even the latter are known very incompletely; over a moderate range of concentration Young's modulus is approximately proportional to the square of the gelatin content (Leick, 1904), but this relation holds up to about 45 per cent. only, whereas air-dry specimens have a gelatin content of 80 to 85 per cent. EMIL HATSCHEK.

London, October 21.

The Causation of Cancer.

THE notice which appeared in the issue of NATURE of October 4 of my book, "Cancer: How it is Caused, How it can be Prevented," contains several misstatements which I must correct. The reviewer puts into my mouth the statement that "cancer is due to constipation and lack of vitamins" as a summary of my teaching, although I have stated in every chapter that cancer is due to chronic poisoning and to vitamin starvation, a totally different matter. The reviewer also states that "Almost the only authorities he quotes are surgeons" and "Their statements [are] mostly from the general press." From the bibliographical index at the end of the book every reader can see that the majority of my witnesses are physicians, physiologists and chemists, although there are a great many surgeons. Besides, my quotations are not "mostly from the general press" but from the leading scientific periodicals, as will be seen by reference to the section "Periodicals Quoted," contained in the bibliographical index.

Further, the reviewer says that I "put forward the pious belief . . . that cancer is a disease of civilisation," giving the impression to readers that I have drawn upon my imagination. In reality, the fact that cancer is a disease of civilisation is fully proved by the pronouncements of more than a hundred physicians practising among uncivilised nations, whom I have quoted and to whom I have referred. The reviewer's statement that I recommend "eating raw food and roots like the beasts in the field" for preventing cancer is another distortion. I have recommended a diet rich in vitamins and in roughage, a diet consisting largely of wholemeal bread and plenty of raw fruit and salads.

In conclusion, the reviewer states that my book "will do much more harm than good." I have

received hundreds of letters from cancer sufferers, both medical and non-medical, informing me that in their case cancer was undoubtedly caused by chronic poisoning and vitamin starvation, and I am receiving every day letters from readers, telling me that their health has been vastly benefited by the adoption of the diet recommended in my book.

J. ELLIS BARKER.

Albion Lodge, Fortis Green,
East Finchley, N.2,
October 13.

I HAVE no desire to embark on a controversy with Mr. Ellis Barker in a scientific journal like NATURE, though I have behind me thirty years' study of new growths. His hymn of hate above is no doubt a relic of the time when, as "Who's Who" informs us, he "devoted his literary career, ever since 1900, to warning England of the danger of a war with Germany and to urging military, naval, and economic preparation." Mr. Ellis Barker may be an authority on the foundations of Germany, British socialism, tariff reform, and the Motherland and Empire, but we must be pardoned if we cannot accept him as the authority on the cause and prevention of cancer. Since the receipt of his onslaught, I have re-read his book and my considered opinion is that it is ridiculous. Mr. Ellis Barker must know perfectly well that the review of his book in NATURE is milk and water compared with the vitamin-free strong potions that have been administered to him on the subject of his book by the *Lancet* (1924, ii. 70), the *British Medical Journal* (1924, ii. 324), *Science Progress* (1924, 328), *American Journal of Public Health* (1924, xiv. 787), and the Journal of the American Medical Association (1924, lxxxiii. 784). I do not, in fact, remember having read in the medical press such wholesale condemnation of any book. THE REVIEWER.

The Choice of Wave-lengths for Achromatism in Telescopes.

MY attention has been directed to Prof. Townsend Smith's letter in NATURE of October 11, p. 536, in which he refers to my paper in the Transactions of the Optical Society. I entirely agree with the very useful curves he has drawn.

It would not be difficult to try the combination of the red lithium line and the F hydrogen line which he suggests, for no new measurements of refractive indices need be made.

In a paper, "The Existing Limits of Uniformity in Producing Optical Glass" (Roy. Soc. Proc. A., vol. 87, p. 190, 1912), a table of the refractive indices of twenty-seven different optical glasses is given, in contiguous columns in the order of their mean dispersions. Indices for both the lithium and the F line run throughout. Since the optical properties of the glasses in adjacent columns very closely resemble one another, interpolation for another glass, the mean dispersion of which lies between them, is easy.

Two later papers with similar tables have been published (Roy. Soc. Proc. A., vol. 91, p. 320, 1915, and vol. 100, p. 624, 1922), and they give a choice of fourteen additional glasses from which to interpolate.

At the end of his letter Prof. Smith refers to $546\mu\mu$, the mercury line, as being not far from the correct minimum for the D and E curve. This is so, and some years ago I computed an object-glass where focal lengths for D and E were equalised with this mercury line for shortest wave-length, and it was afterwards constructed. Although definition proved