TABLE I—Fingerprint Patterns on all 10 Fingers

Subjects	Whorls (%)	Twinned Loops (%)	Ulnar Loops (%)	Arches (%)	Radial Loops (%)
Controls (1,000)	22	5	63	6	5
Wilson's disease (22)	21	8	59	8	4
Wilson's carriers (13)	24	3	59	7	7

TABLE II—Right Thumb Patterns

Subjects	Whorls (%)	Twinned Loops (%)	Ulnar Loops (%)	Radial Loops + Arches (%)
Controls (1,000)	25	14	60	1
Wilson's disease (22)	25	15	60	0
Wilson's carriers (13)	46	0	54	0

ever, their findings have never been confirmed, and they have become so widely quoted both in papers and books that they have come to be unquestioningly accepted. Thus, in Professor Sheila Sherlock's book² it is stated in the chapter on hepatolenticular degeneration that the genetic factor is emphasized by the finding of increased "whorl" fingerprint patterns in sufferers.

Wilson's disease is an inborn error of hepatic copper metabolism and it is inherited as an autosomal recessive. We have studied the palmar dermatoglyphs of 22 consecutive patients with the disease seen at the Royal Free Hospital as well as 13 parents and offspring of these patients who are obligative heterozygotes. Our controls consisted of 500 males and 500 females who were healthy, unrelated, and came from the south and west of England. The results for fingerprint patterns are shown in Table I.

It is clear from these results that the possession of the gene for Wilson's disease in a single or double dose has no consistent effect on fingerprint patterns. To ensure that an increase in whorls was not localized to the right thumb the figures for this digit are given in Table II.

Other dermatoglyphic measurements—namely, total finger ridge count, a-b ridge count, and ad angle were also normal in our patients with Wilson's disease and their heterozygous relatives.

We conclude that dermatoglyphs will not help with the diagnosis of Wilson's disease nor will they help to detect heterozygotes, and therefore they cannot be used to aid genetic counselling. We are unable to confirm any of the positive findings of Hodges and Simon.¹

We are indebted to Professor S. Sherlock for permission to study her patients. T.J.D. is in receipt of a grant from the South-Western Regional Hospital Board and the United Bristol Hospitals.

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¹ Hodges, R. E., and Simon, J. R., *Journal of Laboratory and Clinical Medicine*, 1962, **60**, 629.
² Sherlock, S., *Diseases of the Liver and Biliary System*. Oxford, Blackwell, 1968.

The Artist's Eye

SIR,—With regard to the prevalence of red-green colour-blindness (Dr. Ann J. Gower, 2 September, p. 586), the recent findings of the follow-up at 11 years of children in the national child development study¹ showed that 6.1% of boys and 1.1% of girls were reported by examining school medical officers

using Ishihara plates to have impaired red-green colour vision. Thus in this national sample about 1 in every 16 males was affected.—I am, etc.,

CATHERINE PECKHAM

National Children's Bureau,
London

¹ Davie, R., Butler, W. R., and Goldstein, H., *Birth to Seven*. London, Longmans, 1972.

SIR,—Your leader writer was of course quite right (19 August, p. 434): many investigators in many places have found an incidence of colour vision defect of between 7 and 8% in males and of 0.4 to 0.5% in females. So Dr. Ann J. Gower (2 September, p. 586), rather than finding your statement "incredible" should surely be asking herself why she seldom discovers any such defect. She does not say at what age the children are tested. The Ishihara plates, though probably the best practical test for routine examination of school children, are by no means a perfect instrument, and older children with lesser degrees of colour vision defect may escape detection—probably without detriment.

A detailed study of the impact of colour vision defect upon education, carried out in Hampshire,¹ revealed incidentally that there was very considerable observer variation in the use of the Ishihara test. In view of the extensive use made of colour in teaching, particularly in the infant schools, it is important that significant degrees of colour vision defect should be detected at an early age so that these children are not at an educational disadvantage. A colour vision test applicable to 5-year-olds is now in use in Hampshire schools.—I am, etc.,

LIONEL BACON

Winchester

¹ Bacon, L. J., *Medical Officer*, 1971, **125**, 199.

SIR,—I was interested to read the letter from Dr. Ann J. Gower concerning colour-blindness in school children (2 September, p. 586). It is a pity that she does not quote any figures.

A few years ago I formed a similar impression of an unusually low prevalence of this condition in the schools where I performed routine medical examinations. When I came to check this I found that out of 308 boys in two schools there were 22 cases of red-green colour-blindness as shown by the Ishihara plates. This is a prevalence of just over 7%, or 1 in 14, not very different from the figure of 1 in 12 to which Dr. Gower takes such exception.

I did incidentally find a higher prevalence in grammar school boys (8 out of 85 or 1 in 10.6) than in boys at a secondary modern school where there were 14 cases out of 223 boys examined, a prevalence of 1 in 15.9. I do not know the significance of this, but it might explain the small number of cases found by Dr. Gower. I believe that a higher prevalence of refractive errors has also been found in boys of grammar school standard.—I am, etc.,

R. H. G. CHARLES

London W.5

Abortion Deaths

SIR,—I serve as one of the regional assessors on maternal deaths, and I must dissociate myself from Sir George Godber's preface to the *Report on Confidential Enquiries into Maternal Deaths in England and Wales 1967-69* (Reports on Health and Social Subjects No. 1).

Sir George writes: "In 1969 there was a substantial reduction in the number of deaths due to abortion." In chapter 5 on Abortion (page 47) the following figures of deaths from abortion reveal clearly a drop in deaths from illegal abortions but a rise in deaths from legal abortions. The total remains approximately the same.

	Deaths from Abortion		
	Illegal Abortions	Legal Abortions	Total
1967	28	1	29
1968	29	5	34
1969	17	12	29

As the total number of abortions, legal and illegal, rises towards 200,000 per annum in England and Wales it seems likely that the total number of deaths from this operation (quite apart from subsequent serious complications) will keep pace.—I am, etc.,

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Aetiology of Varicosity

SIR,—Mr. Denis P. Burkitt's data (3 June, p. 556) on the geographical distribution of venous disorders are very striking, and it is interesting to see the outcome of all the forms we fill in for him. However, I find the postulated mechanisms much less convincing. He implies throughout that rural Africans are happily free from constipation. This is certainly not their own opinion, though their definition of constipation differs from ours and would be something like less than two bowel actions a day. They frequently complain of it, and a loaded colon is commonly palpable in the African abdomen (at least, it is around here). Even though their stool transits twice as fast as that of people in the U.K., if its volume is, as Mr. Burkitt states, more than four times as great, the amount in the colon at any one time could be at least as great as that of people in the U.K. They might not have faecal arrest but the hypothetical pressure on pelvic veins would be no less. This would invalidate Cleave's explanation.¹

Similarly, the alternative explanation that Africans do not strain at stool is an unproved assumption. They are avid users of