in one patient in whom serial biopsies showed disappearance of interlobular fibrosis and lobular distortion over a six-year period. Nevertheless, an underlying macronodular cirrhosis may be difficult to exclude in the small specimens obtained by needle biopsy. Of particular interest are the two patients of Weintraub, Conrad, and Crosby[3] in whom the initial biopsy showed definite nodular regeneration with broad bands of fibrosis. At the end of venesection therapy the appearances were similar except that the iron had been removed, whereas eight years later, after the patients had been mantained on intermittent venesections, lobular architecture was normal with minimal fibrosis only. Pirart[4] reported similar findings in a 47-year-old non-alcoholic patient with haemochromatosis. After removal of 48 litres of blood over a two-year period the liver was free of iron though fibrosis remained. Three years later a further biopsy showed disappearance of the fibrosis."

In interpreting Williams's own experience it is important to bear in mind his opinion that "a prolonged period may be necessary for repair of the initial damage to the liver after the iron has been removed and further accumulation prevented." Only 24 of his 40 patients had been under treatment for more than four years. That these patients, with two exceptions, had not shown increasing severity of cirrhosis indicates that they have not deteriorated in the manner of untreated haemochromatosis.

I respectfully submit that the authority of the *British Medical Journal* should not appear to encourage a passive attitude in a disease where patients can be salvaged by a therapy of demonstrated effectiveness.—I am, etc.,

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2 Knauer, C. M., Gamble, C. N., and Monroe, L. S., *Gastroenterology*, 1965, **49**, 667.
3 Weintraub, L. R., Conrad, M. E., and Crosby, W. H., *Medical Clinics of North America*, 1966, **50**, 1579.
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** It was not our intention to deny that venesection therapy can be of value in the treatment of haemochromatosis, but other publications by Williams and his group[1] have shown that arthropathy can develop even after venesection therapy has been completed, and symptoms of it, if it has appeared earlier, are not relieved like those of the other manifestations of the disease. As Professor Crosby points out, there is good evidence now that venesection therapy can prolong life and relieve many of the symptoms of the disease.—ED., *B.M.J.*

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Adhesions and Fibrosis

SIR,—I am glad that Mr. F. T. Crossling (6 September, p. 593) accepts in principle my suggestion of a fibrotic diathesis (9 August, p. 350). Unfortunately he appears to have wrongly concluded that I was attributing all thick scars to such a diathesis.

Many scars without the marked surface elevation or irregular contour commonly associated with keloids remain palpably thickened permanently. Most of the thickened scars in my series of (European) patients with a history of adhesion obstruction were of this type. Preliminary studies had shown a significantly higher incidence of thickening greater than an arbitrary 3 mm. in mature vertical central abdominal scars in these patients (18 out of 23) compared with a control series (13 out of 52). Scars so situated were chosen because all the adhesion patients had at least one, and controls with similar scars were readily available.

These results do, I believe, lend support to the concept of a fibrotic diathesis, but they do not lead to the conclusion that all thickened scars arise from this cause. Mainly because certain areas of the body are more prone to gross scarring, as Mr. Crossling pointed out, I am sure that many if not most thick scars are due mainly to dermal factors. Similar remarks would apply in the case of peptic ulceration.—I am, etc.,

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Immunoglobulins and the X-chromosome

SIR,—We are interested in the paper by Dr. K. Rhodes and his colleagues (23 August, p. 439) in which they compared the levels of IgM globulin in women with an additional X-chromosome (XXX) with those in normal women (XX) and normal men (XY). The mean IgM level was found to be highest in the XXX group, intermediate in normal women, and lowest in men; these differences were statistically significant.

We have determined the levels of IgM and IgG globulins in 27 women with Turner's syndrome (XO), and in two groups of normal women (XX) and normal men (XY) matched for age. Estimation of the levels of these proteins was carried out using the simple radial diffusion technique.[1 2] Antibodies against *Esch. coli* WF 96 and *Listeria monocytogenes* were tested using the indirect haemagglutination method.[2 3] The individual levels of IgM in the three groups are shown in Fig. 1. Statistical analysis of the data revealed a significantly higher mean IgM level in the XX group than in the XY and XO groups ($P<0.01$). No difference was observed between the XY and XO groups ($P>0.5$). The mean levels of IgG globulins were similar in the three groups. Fig. 2

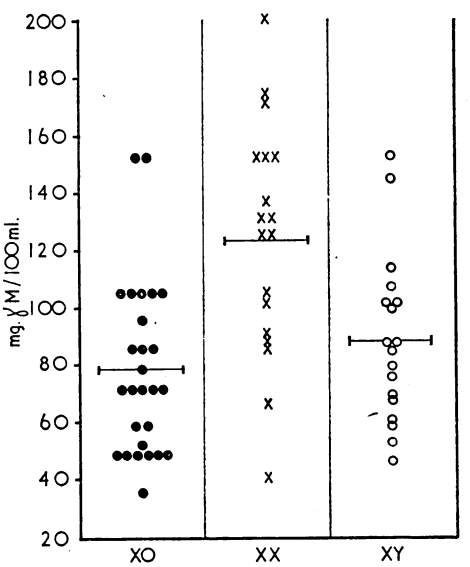

FIG. 1.—Individual values and mean levels of IgM globulin in XO, XX, and XY subjects.

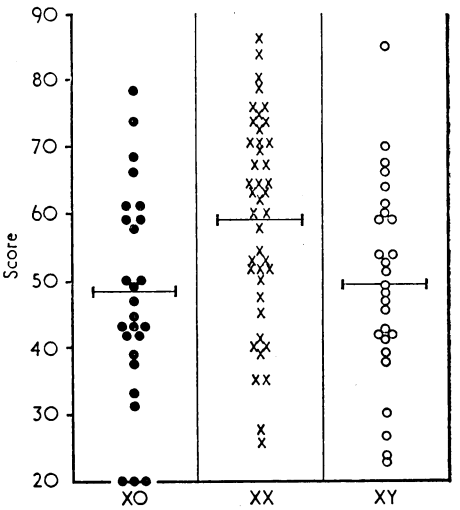

FIG. 2.—Levels of antibodies against *Listeria monocytogenes* and mean values in XO, XX, and XY subjects. Titres expressed as "score."

shows the individual titre of antibodies against *Listeria monocytogenes* in the three groups. Previous studies have shown that these antibodies are associated with IgM globulins in subjects not experiencing an acute infection.[3]

The statistical analysis of results was carried out using the antibody titre expressed as score.[3 4] The mean level of antibodies against *Listeria monocytogenes* was higher in the XX group than in the other two groups ($P<0.01$); once again there were no differences between XY and XO ($P>0.5$). Similar results were observed testing the antibodies against *Esch. coli* WF 96.

These data support the suggestion expressed by Dr. Rhodes and his colleagues that genetic factors control the levels of IgM globulins in man. These studies will be published in detail elsewhere.

This work was supported by the Spastics Society and the Medical Research Council.

—We are, etc.,

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Sugar and Ischaemic Heart Disease

SIR,—Since atherosclerosis leading to occlusive arterial disease such as ischaemic heart disease is generally supposed to be a process that extends over many years, Dr. J. M. McGarry (30 August, p. 530) is right to point out that one needs to assess the