(B.M.J. in press) immunosuppression has been managed on the basis of regular white cell counts with acute rejection episodes diagnosed on biochemical and clinical grounds. One patient has died, five nephrectomies have been performed, and the remaining 27 patients (82%) are alive and well at from three years to six months post-transplant. We feel from our research experience that the rosette inhibition test is not sensitive or accurate enough as an index of "immune status" to be used as the basis of patient management in clinical renal transplantation.—We are, etc.,

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1 Munro, A., et al., *British Medical Journal*, 1971, 3, 271.

2 Shanfield, I., Wren, S. F. G., and MacLean, L. D., *Transplantation*, 1971, 12, 80.

Allergy to House-dust Mites in the Tropics

SIR,—Asthma is a common problem in tropical medical practice.^{1,2} In our experience it was the third most common cause of male medical admissions to Ndola Central Hospital in 1971. The 172 male asthmatic admissions represented 9% of the total male medical admissions during that year and provided a disproportionately heavy clinical load with numerous readmissions and resistance to the usually employed bronchodilators.

Allergy to house-dust mites has been convincingly demonstrated as a cause of asthma,³ and it has been stated to be an important factor in the aetiology of asthma in the tropics.⁴ This preliminary study was designed to test the validity of this hypothesis.

Ndola lies at an altitude of 1,280 metres, latitude 13° S., and is the commercial and distributive centre of Zambia's copperbelt. Admissions to hospital of asthma cases are greatly increased during the wet season (November–April), when the relative humidity is high (Table I). The climatic conditions of the wet season provide favourable conditions for mite growth whereas the low relative humidity of the dry season (May–October) is unfavourable.⁵

TABLE I—Mean Monthly Temperature, Relative Humidity, and Total Monthly Asthma Admissions for 1971

Month	Mean Temperature	Relative Humidity	Total Asthma Admissions
January	20.1	83	16
February	20.4	81.5	31
March	20.8	75.2	61
April	20.8	70	42
May	18.2	51	28
June	16.3	50	20
July	17.2	49	8
August	19.5	39	5
September	22.0	40	12
October	23.4	41.1	7
November	21.4	69.3	9
December	20.6	78.4	13

Thirty unselected adult Zambian African asthmatics (25 men, 5 women) were tested by the modified prick test using an extract of *Dermatophagoides farinae* prepared by Bencard and compared with 30 controls matched for sex, age, and smoking history

TABLE II—Reaction of Asthmatic Patients and Controls to Prick Test with *Dermatophagoides farinae*

	Reaction		Total
	Positive	Negative	
Asthmatics	25	5	30
Controls	4	26	30
Total	29	31	60

χ^2 26.7; D.F. 1; $P < 0.0005$

(Table II). Twenty-five of the 30 asthmatics (83%) gave a positive reaction to the allergen, but only four of the 30 controls (13%) were positive, a statistically highly significant difference (χ^2 26.7, D.F. 1, $P < 0.0005$). All the asthmatics were asked to collect a dust specimen from their sleeping area. Of the 18 specimens received 11 had live mites of *Dermatophagoides* species present. Both *D. pteronyssinus* and *D. farinae* were identified. In three others only mites of the species *Glycophagus* and *Cheyletus* were found.

These results suggest that allergy to house-dust mites is a very significant factor in the aetiology of asthma in Ndola, and this is probably so elsewhere in tropical Africa where asthma is common. No attempt was made to skin test the asthmatics with other allergens. This has been done on Nigerians on a limited scale with inconclusive results.¹ Further studies are indicated to assess the possible importance of these other allergens.

If the results of this study are confirmed it would seem reasonable to embark on a trial of hyposensitization, as this has been shown to be of some benefit,⁵ and to examine the possibility of mite eradication.—We are, etc.,

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1 Sofowora, E. O., *East African Medical Journal*, 1970, 47, 434.

2 Anim, J. T., and Edoo, B. B., *Ghana Medical Journal*, 1972, 11, 59.

3 *British Medical Journal*, 1971, 2, 601.

4 Githo, F., and Rees, P., *British Medical Journal*, 1971, 3, 475.

5 Maunsell, K., Wraith, D. G., and Hughes, A. M. *Lancet*, 1971, 1, 967.

Chinese Heroin

SIR,—In the light of recent press reports of a large scale importation of impure Chinese heroin to Britain via Hong Kong the following case is disturbing.

Previously treated for reactive depression attributed to frustration in her employment as a children's nurse in 1967, a 22-year-old married woman was referred after returning from London to her mother's Blackpool home. Introduced to intravenous heroin and phseptone by her boy-friend—later husband—two years ago, she obtained supplies of impure Chinese heroin from the wife of a Chinese pusher. She stated that rapidly increasing tolerance caused her to increase the dose sixtyfold ($\frac{1}{4}$ ounce (7.7 g) daily). She developed amenorrhoea and abscesses and thrombophlebitis in both arms and her general condition deteriorated, with weight loss of 20 lb (9 kg). Her husband was admitted to a London clinic for treatment of heroin addiction. She insisted that since returning to Blackpool she had taken only a tiny dose of Chinese heroin, about the source of which she was very reticent, and experienced some withdrawal symptoms—cold-

ness, sweatiness, pains in the abdomen, and constipation.

Until recently virtually all heroin in this country ultimately came from medical sources, formerly from prescribing and latterly from the treatment centres themselves.¹ To some extent this limited the spread of addiction and the purity of the drug reduced the likelihood of adverse clinical effects. Moreover, it is assumed that addicts seeking supplies will thus attend the drug-dependence centres. Now we are confronted with pushing by people supplied by allegedly extensive illegal imports. If so, we have a situation similar to that in the United States, where there has been an epidemic of addiction with disastrous social and medical effects. Furthermore, the stimulus for addicts to seek treatment may well be lessened.

That this patient came to Blackpool and was still able to obtain supplies suggests that this addiction may spread through the country. In view of these clinical and epidemiological considerations it is disturbing that notification of heroin addicts to the Department of Health through the hospitals concerned, begun in July 1967, was discontinued in January 1971, though notification to the Home Office under the terms of H.M.(68)6 remains.²—I am, etc.,

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1 Gardner, R., and Connell, P. H., *Lancet*, 1970, 2, 455.

2 Home Office, *The Dangerous Drugs (Notification of Addicts) Regulations 1968*. London, H.M.S.O. H.M.(68)6.

School Refusal

SIR,—Dr. Lionel Hersov (8 July, p. 102) might have found space to mention more specifically the management roles of the general practitioner and the school medical officer. At primary care level they are community physicians co-operating in the fields of paediatric mental health and infectious disease control. Subject to the interest they show, they may or may not need to involve psychiatric or child guidance staff. Many cases are resolved without resort to the advice of either. Dr. Max B. Clyne¹ illustrates this point.

As Mrs. Diana J. Leigh (22 July, p. 236) and Dr. G. L. Davies (29 July, p. 293) point out, the trigger factor in a multifactorial aetiology is usually social (for example, change of school or illness of a relation). However, the social worker most likely to be involved is specifically the educational welfare officer. He is not part of the post-Seebohm social services department but at present is an educational department colleague of the school medical officer working for the same local authority. He is thus well placed to cope with those children for whom social and medical advice may be necessary or on whose behalf legal proceedings may need to be taken. The early determination of the very difficult problem of which children are challenging authority as truants (and therefore potential behaviour or conduct problems with later personality disorders) is very important indeed. Dr. Hersov has himself given very useful and valuable advice on this aspect, which has in practice been found to work.²

These children are problematic in more

ways than one, not least that most refuse to attend child guidance clinics or out-patients. They are not only school refusers but "clinic refusers" and do not come to light easily or early without the regular scrutiny of school attendance registers, sickness notes from parents to teachers, etc. Others are presented ab initio as posing an educational problem needing the advice of educational psychologist or specialist school doctor. Assessment from the developmental point of view, especially as to social maturity, is bound to be involved. Frequently delay is owing to medical or psychological factors. Cases may be classified on a medical basis as disease entities appearing in one form but perhaps remitting as another later.² Some children are almost chameleon-like in masquerading neurotic or physical symptoms as social problems. They are liable to obtain a good deal of perverse satisfaction by performing before a succession of professional audiences the mysteries of their case.—I am, etc.,

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¹ Clyne, M. B., *Absent*. London, Tavistock Publications, 1966.

² Burne, B. H., *Medical Officer*, 1966, 115, 103.

Haemolytic Streptococcus Group R Infection

SIR,—We report a case of human infection by group R haemolytic streptococci, which brings the total number of cases described in the literature to five.

The patient, a 47-year-old, healthy butcher engaged in slaughtering pigs, was admitted to hospital acutely ill with fever and periodic confusion. He was semicomatose, with increased muscle tone and a bilateral Babinski's reflex. There was no stiffness of the neck. The temperature was 102.2°F (39°C), pulse rate 76, blood pressure 130/80 mm Hg, and respiration rate 28. The cerebrospinal fluid was turbid and yellowish with a cell count of erythrocytes 50/ μ l., polymorphonuclears 700/ μ l., and mononuclears 150 μ l., and concentrations of protein of 8.6 g/l. and sugar of less than 0.3 g/l. The blood sugar was 1.5 g/l. Direct microscopy of Gram-stained spinal fluid showed a few bacteria thought to be pneumococci, but later streptococci, identified as haemolytic streptococci Group R, were cultered from both the C.S.F. and blood. They were sensitive to all antibiotics examined except sulphonamides. Primary treatment was with penicillin, streptomycin, chloramphenicol, and sulphamethizole.

Two days after admission respiratory arrest occurred: intermittent positive pressure ventilation was started and the patient placed in a refrigerated room. The condition was complicated by bilateral pneumonia. *Pseudomonas aeruginosa* was cultured from the sputum. Clinically and radiologically the pneumonia cleared in a few days and the patient recovered gradually. Artificial ventilation was stopped after six days and the temperature was normal after 12 days. Thirteen days after admission the patient responded to speech, but there was amnesia for events during the previous 21 days. The E.E.G. four days after admission was exceedingly abnormal with abundant diffuse 1-3 c.p.s. activity and slight suppression of the right hemisphere. One month later the E.E.G. was less abnormal but still characterized by diffuse activity of low frequency.

After eight weeks in hospital the patient was discharged. Psychometric tests indicated organic dysfunction of the brain. Neurological examination was normal. Cold agglutinin titre and parotitis, herpes, and psittacosis complement fixation tests were normal. Coxsackie viruses could not be isolated from the spinal fluid.

Group R streptococci were first reported in 1963,¹ isolated from septicaemic infections in pigs. The first report on streptococci of group R causing infection in man appeared in 1968.² Two cases of meningitis and one fatal case of sepsis were described. Evidence was given for the biochemical and serological identity of the streptococci isolated from man with de Moor's reference strain isolated from a pig. Since then one case of purulent meningitis caused by group R streptococci has been published.³

There are several similarities in all the cases described. The course of the disease was almost identical, four of the patients had meningoencephalitis, and the patients were men. In three cases the origin of the infection was possibly a skin lesion, and in three cases, including the one described here, there had been contact with pigs. It is remarkable that human infection with group R streptococci has been described only in Denmark. The reason for the small number of reported cases might be that the infection is thought to be due to streptococci of a different group or pneumococci, because of some similarities in the morphology of the colonies and overlapping serological reactions—We are, etc.,

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¹ Moor, C. E. de, *Antonie van Leeuwenhoek, Journal of Microbiology and Serology*, 1963, 29, 272.

² Perch, B., Kristjansen, P., and Skadhauge, Kn., *Acta Pathologica et Microbiologica Scandinavica*, 1968, 74, 69.

³ Perch, B., and Kjems, E., *Acta Pathologica et Microbiologica Scandinavica, Section B*, 1971, 79, 549.

Toxic Amblyopia from Ibuprofen

SIR,—Two patients with ocular symptoms related to ibuprofen therapy have been reported.¹ The first had defective vision and a bilateral central field defect. Six months after withdrawal of ibuprofen visual acuity returned to normal and the field defects disappeared. The second had a visual disturbance which was thought to be cortical in origin and not a true toxic amblyopia. The same report recorded the findings in 38 patients taking ibuprofen, one of whom seemed to have a true toxic amblyopia. I report here a further case of toxic amblyopia caused by ibuprofen.

A woman aged 57 was referred in November 1971 complaining of failing vision for some months, which her optician had been unable to correct by a change of spectacles. She also described difficulty in distinguishing blues and greens and had made a glaring error in colour-matching when choosing clothes. She had been taking ibuprofen 1,200 mg daily since June 1971 for "fibrositis." The total dose consumed by the time of her first attendance was approximately 168 g. She had also had a short course of troxerutin and an occasional dose of Sonalgin. She took alcohol in moderation once a fortnight. She was a non-smoker. Six years before she had been treated for pulmonary tuberculosis and had developed a rash attributed to PAS.

Corrected visual acuity was 6/24 in each eye: she read N.8 print with difficulty. (Reference to her optician's records showed that her visual acuity in May 1970 had been 6/9 in each eye.) The media were clear and the fundi were normal. Visual field studies were unhelpful, because her concentration and comprehension were inadequate. Static perimetry, as advocated by Foulds and colleagues,² was not available.

The patient was almost totally colour-blind by the Ishihara test. A grossly abnormal profile was recorded with the Farnsworth-Munsell 100-hue test. E.R.G. and E.O.G. tracings were within normal limits. Blood examination was normal.

Though reliable field studies were impossible, the combination of failing eyesight and an acquired colour vision defect with normal fundi pointed to a diagnosis of toxic amblyopia. She was taken off ibuprofen on 1 December. She did not return for examination until 21 March 1972 when she reported a gradual improvement in eyesight and colour vision. Visual acuity was 6/12 in each eye and she read N.6 print with ease. No errors were made with Ishihara's plates and the Farnsworth-Munsell test showed a pronounced improvement. On 3 May the visual acuity was 6/9 right and 6/12 left and she could read N.5 print. The Farnsworth-Munsell test showed a further improvement.

The diagnosis of toxic amblyopia rests on visual failure unaccompanied by visible retinal abnormality, a characteristic field defect, and an acquired defect of colour vision. Though reliable visual field studies were impossible in this patient the colour vision defect was easily demonstrated. In toxic amblyopia the Farnsworth-Munsell test characteristically demonstrates a concentration of errors in a bipolar fashion, the axis extending between the yellow/red (10 o'clock) and purple/blue (4 o'clock) regions. This characteristic profile was not seen in this case, probably because severer degrees of toxic colour-blindness affect many wavelengths. The typical bipolar shape may emerge only during the phase of recovery.^{2,3} The recovery of vision in this patient was almost complete, but a continuing measurable improvement in the colour sense may be detected.

Drugs which can cause ocular side effects, including toxic amblyopia, have been listed.^{4,5} Ibuprofen should now find a place in the list.

I am grateful to Mr. I. M. Strachan for interpreting the electrodiagnostic tests, to Mrs. M. Saynor for technical assistance, and to Mrs. C. Duffy for secretarial help.—I am, etc.,

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¹ Collum, L. M. T., and Bowen, D. I., *British Journal of Ophthalmology*, 1971, 55, 472.

² Foulds, W. S., Chisholm, I. A., Bronte-Stewart, Joan, and Reid, H. C. R., *Transactions of the Ophthalmological Societies of the United Kingdom*, 1970, 90, 739.

³ Ainley, R. G., *Transactions of the Ophthalmological Societies of the United Kingdom*, 1970, 90, 765.

⁴ Willetts, G. S., *British Journal of Ophthalmology*, 1969, 53, 252.

⁵ Crews, S. J., James, Brenda, Marsters, J. B., and West, R. H., *Transactions of the Ophthalmological Societies of the United Kingdom*, 1970, 90, 773.

Payment by Colour

SIR,—Having followed with interest the letters on payment by colour I feel that there are one or two pertinent facts which should be brought to your notice, none of which have been adequately emphasized in the B.M.J. thus far.

Firstly, the Republic of South Africa is divided up into areas, each area being under the control of either part- or full-time district surgeons. This also applies to the Bantu homelands. These medical officers are paid by the Government and are responsible for the well-being of the population in their areas. A short summary of how medical services are run in my area, which borders on