gratefully) lived through a clinical revolution which enabled us to pick up and lead normal lives.

At the time of writing I am, so far as I know, fit and privileged to have benefited from the dedication of those hundreds of tuberculosis specialists who literally nursed us through all the experimental treatments which began the medical revolution in the 1950s and early 1960s. It is probably true that the public at large does not realise the vast change that has occurred. But the patients who survived will never forget it.

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A case of haemolytic-uraemic syndrome

SIR,—The Clinicopathological Conference (21 July, p 179) presents and discusses an uncommon but catastrophic sequel to an otherwise normal pregnancy. I think Dr D Gwyn Williams's discussion is excellent, but I must draw attention to one or two points in it.

I agree that the data indicate the presence of a microangiopathic haemolytic anaemia; however, this condition is almost invariably associated with disseminated intravascular coagulation, and to state that defibrination was not evident because of a normal fibrinogen is erroneous. Plasmin fibrinogen concentration (we measure clottable protein rather than estimating the titre) is elevated in normal pregnancy by at least 100% at term and returns to normal non-pregnant values only very slowly. Thus the titre of 1/128 represents a low value—in other words, hypofibrinogenaemia.

Pregnancy does indeed facilitate the generalised Schwartzman reactions—in animals at least—but I know of no evidence to implicate placental emboli, as these are found in a very large percentage of normal pregnancies. Dr J H H MacRae's comment vis-à-vis "obstetric mischief" is interesting if not provocative, and I wonder to what "powerful" labour-inducing drugs he refers.

I agree with Dr Williams that no drugs have been shown to be culpable. However, the synthetic oestrogens used for lactation suppression have been shown to enhance postpartum coagulability and to have an association with deep thrombosis in the puerperium. I know of no such relationship to microangiopathic haemolytic anaemia.

Finally, I agree that bilateral nephrectomy might have been considered at an early stage in the management of this tragic case.

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Too few necropsies

SIR,—It is not only a decline in necropsy numbers in hospital patients that is the problem: it is the standard of the necropsy, as Dr H A Fleming says (25 August, p 501). In a medical school the necropsy is thorough in every minute aspect; for the student pathologist has to learn, and even to research, the significance of all appearances. Away from such centres the pathologist can continue with his learning, teaching, and research; but it is the standard of his clinical-pathology con-

ference now which has to be judged. I would define every necropsy as a conference of this kind—and one designed to check and counter-check the clinical significance of all findings. We must be aware, too, of the potential in every coroner's case.

Success depends on concerned clinicians and pathologists realising the limitations of their professed disciplines and thinking over the necropsy exhibits together, just before and during the actual cutting. When the macroscopic sectioning is finished all can discuss relevant matters on the spot; and from time to time histology, biochemistry, microbiology, and other subdisciplines may be called in to postpone decision when this is justified.

How many necropsies done at his request has Dr Fleming missed seeing and discussing in this way? I suggest that we encourage the habit of seeking to make such discussions happen, for then I am sure that fewer matters of relevance will remain undiscussed and undisclosed.

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Abnormal cilia

SIR,—Your recent leading article entitled "Abnormal cilia" (23 June, p 1663)¹ refers to a topic of renewed interest in pathology: the possibility of a relationship between structural abnormalities of the cilia and impaired mucociliary functions.

Unfortunately, however, the article contains a number of errors. The main conclusion of the article is that "impaired mucociliary clearance, then, seems to be associated with structural abnormalities of the cilia." This is not necessarily so. In many—perhaps most—cases of impaired mucociliary clearance the entire ciliated epithelium is altered. A squamous metaplasia develops but there are no changes in the cilia as such.¹ In the case of cystic fibrosis the mucociliary functions are impaired, but the cilia have been shown to have a perfectly normal structure.² The explanation is simple. Mucociliary clearance is performed by a system with at least two components, and an error may reside in the mucus production or in the mucus properties rather than in the cilia.

It would be true, however, to say that structural abnormalities in the cilia will cause a defective or even absent mucociliary clearance. In my opinion there are several forms of inborn ciliary defects which all give rise to what has been called the immotile-cilia syndrome.³⁻⁵ These forms are characterised by deficiencies in either the outer dynein arms, the inner dynein arms, both the outer and inner dynein arms, the spoke heads and central sheath components, or some other essential component.⁵ There are also many other forms of inborn or acquired errors in the ciliary structure. When only some of the cilia are affected, as is the case with the clumping of cilia into what has been called compound cilia, then the influence on the mucociliary clearance may be negligible. It is recommended that cilia are examined in their living state for their motility, and that the electron-microscopical sections are examined with respect to one characteristic of the cilia in the immotile-cilia syndrome—the loss of the normal, parallel orientation of the cilia.

It is to be noted that the cilia have nine microtubular doublets in a circle around the central two microtubules, and that these doublets (which are unlikely to be identical) have two dynein arms on their one component, the subfibre called the A-tubule. The description given in your leading article is quite confused.

In the last paragraph you say that further electron-microscopical studies of patients with chronic bronchitis are recommended, but that the rotational imaging technique for contrast enhancement has to be used. I cannot agree with the second point. With the rotational technique⁶ it is possible to get nearly any kind of image one wants to obtain.⁷⁻⁸ It is a technique which must be used with great caution, if at all. There is no substitute for taking electron micrographs that are good enough to make the individual structural components of the cilia—spokes or dynein arms—visible.

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¹ Konradova, V, Tomanek, A, and Hlouskova, Z, *Folia Morphologica (Prague)*, 1976, **24**, 296.

² Kollberg, H, et al, *Scandinavian Journal of Respiratory Diseases*, 1978, **59**, 297.

³ Eliasson, R, et al, *New England Journal of Medicine*, 1977, **297**, 1.

⁴ Afzelius, B A, *International Review of Experimental Pathology*, 1979, **19**, 1.

⁵ Afzelius, B A, and Eliasson, R, *Journal of Ultrastructure Research*, in press.

⁶ Markham, R, Fry, S, and Hills, G J, *Virology*, 1963, **20**, 88.

⁷ Agrawal, H O, Kent, J W, and MacKay, D M, *Science*, 1965, **148**, 638.

⁸ Friedman, M H, *Journal of Ultrastructure Research*, 1970, **32**, 226.

Umbilical hernia and abdominal cramp in swimmers

SIR,—I was most interested in the letter from Mr F D Skidmore (25 August, p 494) relating to umbilical hernia in swimmers. He inquires whether abdominal cramp in swimmers does in fact occur.

During a course for potential internationals some years ago a boy of 17 years, himself an international sprinter, ceased swimming, made for the pool side, and pulled himself out by the use of his arms. The whole of the abdominal musculature was in spasm. The spine was extended and hot towels were placed on the abdominal wall. After a while the spasm abated and he was able to have a hot shower and get dressed. There were no after-effects; in fact, he trained at a session later in the day. Inquiry revealed that he had been in the gymnasium performing exercises with the medicine ball prior to training in the pool and his cramp was possibly the direct result of this activity.

Mr Skidmore's observation has brought to our notice the value of the examination of young athletes before embarking on training programmes, and the possible danger that could arise to those swimming alone.

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SIR,—It must be doubtful whether swimming training can cause umbilical hernia and equally doubtful whether a "small hernia" can cause gross abdominal muscle spasm and rapid splinted respiration, as suggested by Mr F D Skidmore (25 August, p 494). Even if Mr Skidmore is correct in linking umbilical

hernia with swimming in this way, it could hardly be via the mechanism described in his extraordinary second sentence, which reads "Forced exhalation is produced by simultaneous contraction of the diaphragm and abdominal muscles in the short time that the head is above water in the swimming cycle." Of course, the diaphragm relaxes (not contracts) during exhalation and when the head is above the water inhalation (not exhalation) occurs. Inhalation and not exhalation is the most difficult part of most swimming strokes. Lifting the mouth out of the water to breathe interferes with smooth progress through the water and the skilful swimmer minimises this part of the stroke; inhalation is very rapid and this allows correspondingly plenty of time for exhalation to occur when the mouth is below water level during the rest of the stroke cycle. The hydrostatic pressure of the water surrounding the chest also contributes to making inhalation the most difficult and strenuous part of breathing.

Swimming coaches and medical advisers are well aware that training that is intensely stressful in a cardiovascular-respiratory sense can produce a syndrome virtually identical to that described by Mr Skidmore. Certainly if an umbilical hernia is present under these circumstances it is likely to be revealed or even compromised. Among examples of this syndrome which one might quote were two very highly motivated international swimmers who collapsed with these symptoms on several occasions during training; one, a sprinter, would become visibly cyanosed before such a collapse and the other had a heart rate of around 220 beats/min even after attachment of an ECG following removal from the water.

Regarding the possibility of umbilical hernia as a cause of drowning, I would suggest that abdominal cramp only existed, even in the folklore, before Keatinge in his book¹ and numerous papers so elegantly described the sudden immersion syndrome and the effects of hypothermia in swimmers, both of which can be an even greater threat to life after a large meal.

Swimming being a non-weight-bearing and non-body-contact sport would seem to cause fewer medical problems in relation to the number of participants than any other vigorous sport. However, Mr Skidmore rightly mentions the large number of children now taking this sport seriously and so medical advice is needed by most swimming clubs occasionally. A conference is being held to discuss medical aspects of competitive swimming for the first time on 3 November 1979 at the Post-graduate Centre, Frenchay Hospital, Bristol, and any interested doctors are invited to apply to attend.

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¹ Keatinge, W R, *Survival in Cold Water: The Physiology and Treatment of Immersion Hypothermia and of Drowning*. Oxford, Blackwell Scientific Publications, 1969.

"Man Against Disease"

SIR,—Lord Taylor (1 September, p 540) may find *Man Against Disease* by J A Muir Gray confusing, but is it the form or the content with which he wishes to take issue?

In criticising the form of the book, Lord Taylor seems himself to be confused between

slang and colloquial speech, and to have an idiosyncratic idea of neologisms, describing in this way words which have been in usage for over 300 years. Such points are, however, unimportant.

What is important is his abrogation of the responsibility of medicine (and society) to the individual, by invoking the pejorative and dismissive concept of "self-denial." To paraphrase, people are ill because they indulge too much in those things which society induces them to, and are too unintelligent to know better. Even if this were more than a half-truth, who has the responsibility for this state of affairs? Lord Taylor is impressed by educational campaigns which frighten, but where is the evidence that these either educate particularly well or produce the desired effect? Research on patient-doctor relationships also shows much scope for improvement. Television commercials are not necessarily effective either.

The "anti" lobbies have arisen not to prevent advances but out of frustration at the inability of medicine to address itself to the issues. That their philosophies are unsound is no evidence that medicine is performing its role properly, and no cause for complacency.

To reject testable approaches to prevention on doctrinaire grounds is nonsensical, or, to borrow Lord Taylor's abuse, "a great nonsense."

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Social factors in marital pathology

SIR,—Dr J Dominian (1 September, p 531) argues that marriages last longer because some "20-25 years have been added to the expectation of life since the turn of the century." This is illogical. The increased expectation of life at birth can have no bearing on the duration of marriage. The important figure is the increased expectation of life after marriage, and this is much less. The Registrar General estimates the expectation of life for men aged 45 in 1900-02 as 22.3 years and in 1971-73 as 27.4 years. The mean duration of marriage for men marrying in 1910-15 was of course shortened by the 1914-18 war.

Possibly the commonest statistical fallacy of recent years is that *old* people are living longer. In 1946 the expectation of life of men aged 65 was 12.4 years, and in 1971-73 it was 12.2 years. At 75 the corresponding figures are 7.3 years and 7.2 years. Women do slightly better. In 1946 their expectation at 75 years old was 8.5 years and in 1971-73 it was 9.5 years.

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Muslims, Ramadan, and diabetes mellitus

SIR,—We were delighted to learn from Dr R N Ebbing's letter (4 August, p 333) that Muslim diabetics in Manchester sought medical advice before embarking on the fast of Ramadan, and the purpose of our letter (7 July, p 46) has been fulfilled.

Unfortunately, Dr Ebbing seems to have drawn conclusions from our data which we felt unable to make. We have not shown that it is safe for diabetics to fast during Ramadan. Fortunately, we did not discover any cata-

strophes, but the control encountered in the six patients on insulin, for example, was far from exemplary, or even tolerable. Intermittent ampicillin, taken by one of the patients, is bad treatment for malaise and is not a therapy for probable hypoglycaemia.

While Dr Ebbing's regimen may be suitable for some patients if they are given the close supervision he suggested, we feel that extra caution is preferable to unnecessary risk. We have *not* produced convincing evidence that it is safe for all Muslims with diabetes mellitus to fast during Ramadan.

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Training posts, disillusioned registrars and a glut of doctors

SIR,—After reading the letter by Professor G W A Dick and Mr Viner regarding post-graduate training (11 August, p 393) I hold little hope for developments in this sphere. Coincidentally, Dr M T Haslam's letter (p 394) gives support for my many misgivings.

I commend Professor Dick and Mr Viner for their efforts within their own region, but in reality they are "closing the stable door once the horse has bolted." Apart from the numerical imbalance between training posts and senior posts, I see two major problems. I will confine my comments to general medicine.

Firstly, there are far too many training backwaters, which, although recognised by the royal colleges, are regarded by juniors (and many consultants) as poor for future prospects. This creates unduly strong competition for teaching hospital posts and none for posts similar to those mentioned by Dr Haslam. The second problem is the restriction of practising general medicine as a specialty to a hospital environment. Medical registrars therefore either proceed to senior registrar or take up a second choice.

Backwaters can be removed by all hospitals being linked formally to a university teaching centre. The junior posts should rotate throughout the region over periods of four to five years. On completion of general training, it should be possible to practise general medicine in a primary care setting as a specialist rather than as a GP. There are thousands of patients, inconvenienced by travelling to hospital, waiting many hours for review of conditions that could be handled by this sort of trained doctor. The benefits include continuity of care, shorter outpatient clinics, and ambulance savings.

To return to Dr Haslam's comments, I sympathise. York is a nice place, but the influence of patronage and kudos in a numerically unbalanced system can only further increase his plight and decrease our morale.

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CCHMS proposals

SIR,—Although Mr B A Ross (25 August, p 503) purports to decry the divisions between various sections of doctors, and especially between maximum and part-time consultants, he promptly goes on to exacerbate the situation.