extract can in no way be considered dangerous. Many wise doctors will safely continue to give thyroid extract to patients who have been well on it for years. Newly diagnosed myxoedema should be treated with thyroxine (or very rarely triiodothyronine), but elderly women on thyroid extract are not living dangerously.

P B S FOWLER

Charing Cross Hospital,
London W6

Beta-blockers in treatment of hypertension

SIR,—Dr R G Wilcox's recent comparative study of once-daily hypotensive treatment (5 August, p 383) showed that atenolol 200 mg produced significantly greater effect than the other agents in the doses tested. He rightly points out that the doses of beta-blocking drugs may not have been equipotent, illustrating a potential limitation of fixed-dose comparative studies. Little further hypotensive effect can be expected by increasing the dose of atenolol further,¹ but this is not necessarily true of the other beta-blocking drugs, and he himself suggests that higher doses of acebutolol or timolol might be more effective.

I am able to confirm these speculations in the case of acebutolol from a recent study.² In the twice-daily dose ranging part of this study ($n=11$), where the dose of acebutolol was increased above the 400 mg/day used by Dr Wilcox, further falls in blood pressure were produced. This fall in blood pressure was unchanged when each subject's total daily dose was given once daily and blood pressure measured more than 24 h after dosing. Furthermore, there was no increase in the low incidence of side effects. In addition, I found that acebutolol 400 mg produced less beta-blockade, measured as reduction in exercise tachycardia, than atenolol 200 mg (maximum $23 \pm 4\%$ v $29 \pm 3\%$, $P < 0.05$, $n=8$), confirming a lack of equipotency in beta-blockade in Dr Wilcox's study.

If useful short-term differences are to be shown between different beta-blockers in the treatment of hypertension they will relate to the magnitude of maximum effect and the side effects and compliance present at any specified level of effect with different agents. Consequently full assessment of the comparative efficacy of beta-blockers in hypertension will also require optimum-dose studies of these agents.

MICHAEL MARTIN

Department of Therapeutics,
Hallamshire Hospital,
Sheffield

¹ Zacharias, F J, *et al*, *Postgraduate Medical Journal*, 1977, **53**, suppl, p 114.

² Martin, M A, *et al*, *British Journal of Clinical Pharmacology*. In press.

SIR,—We were interested in the paper by Dr R G Wilcox (5 August, p 383), as too few studies measure exercise blood pressure during the 24-h period following drug administration. It is surely misleading, though, for the author to discuss changes in exercise blood pressure levels when the only reading taken was immediately on cessation of exercise, this presumably being at some point between 10 and 45 s of the post-exercise phase. Of more interest would be the blood pressure recorded during, say, the last 30 s of exercise. Absolute levels, in both the untreated and treated

hypertensive patient, fall sharply by as much as 40–50 mm Hg systolic within the first 10–15 s of stopping exercise¹ and therefore it appears inappropriate to use a Hawksley random zero sphygmomanometer in a very rapidly changing haemodynamic situation. Furthermore, a 1-min dynamic exercise is useless in these studies as it takes at least 3 min to achieve steady-state levels of raised blood pressure.

As none of the drugs used in the study totally prevented significant increases in the immediate post-exercise systolic blood pressure it is reasonable to assume that the same applies to the blood pressure levels occurring towards the end of exercise and would suggest that the dose used was inadequate. From work we are currently evaluating it would appear that exercise-induced "peaks" of systolic blood pressure in certain hypertensive patients of 200 mm Hg or more can be attenuated in the whole of the 24-h period by adequate doses of some beta-blocking drugs following a single daily dose, the systolic pressure being reduced to the more normal range of 140–160 mm Hg. That the "peaks" carry important risks still remains to be proved, but in the meanwhile Sokolow's findings² may well be pertinent.

Finally, we feel that to demonstrate the hypotensive effect only at rest and not during exercise is an observation of limited value when most hypertensive patients are mobile during much of the 24-h period. The correct therapeutic dose is important and can only be judged by effective control of the stress peaks.

M BRIAN COMERFORD
EDWIN BESTERMAN

Waller Cardiopulmonary Unit,
St Mary's Hospital,
London W2

¹ Millar-Craig, M, and Raftery, E B, personal communication.

² Sokolow, M, *et al*, *Circulation*, 1966, **34**, 279.

Computer confidentiality

SIR,—It is profoundly to be hoped that the medical profession as a whole does not conclude from the expressed intentions of the Department of Health and Social Security or from the views of its supporters in this matter (Drs P M Dunn and C H M Walker (22 July, p 276) and Dr P Samet (5 August, p 429)) that workers in the field of computing are collectively bent on undermining the concept of confidentiality of patients' records. To one who has worked in co-operation with doctors for any length of time it should be apparent that adequate physical security of computer files, even if it can be guaranteed (Dr Samet), is only a first prerequisite for overall effectiveness of a system which is bound to involve the human element at many levels. It should also be evident that it is equally important that a belief in this security be transmitted to the patients (that is, the general public) or their trust in their medical advisers will be lost, with all the unfortunate consequences that that would entail. I contend that at a time when stories of computers losing driving licences and producing inflated gas bills are rife, and when there is talk of totalitarian regimes using computerised records for their own ends, public faith in the integrity of the proposed scheme would with some justification be low, and that the medical professions are right in their present attitude of opposition (22 July, p 298; Dr R M Forrester, 5 August, p 429).

The situation may very well change, perhaps sooner than we realise; but it is imperative that even when the time comes when medical records can confidently be committed to computer storage on a nationwide scale each individual patient record must remain localised and under the control of the doctor or doctors responsible for that patient.

K A JOHNS

Department of Medical Statistics,
Welsh National School of Medicine,
Cardiff

Cigarette smoking and postoperative deep-vein thrombosis

SIR,—Mr J K Clayton and his colleagues (5 August, p 402) confirm a lower incidence of postoperative isotopic deep-vein thrombosis (DVT) in cigarette smokers and suggest that this may be related to body weight or may "reflect resistance to venous thrombosis as a constitutional feature which correlates with but is not due to a predilection to smoke cigarettes."

In a recent series of 166 patients undergoing emergency or elective laparotomy for benign or malignant disease or retropubic prostatectomy in whom two methods of intermittent pneumatic compression of the calves were compared we found that the total incidence of isotopically detected DVT was 31.3%. Ten out of 52 (19.2%) cigarette smokers, seven out of 17 (41.2%) pipe smokers, and 35 out of 97 (36.1%) non-smokers developed DVT. Cigarette smokers had a significantly lower incidence than the rest ($\chi^2=5.15$, $P < 0.05$).

The principal difference between non-smokers and cigarette smokers turned out to be their age, which was 68.2 ± 1.0 (SEM) years among non-smokers and 61.0 ± 1.4 among cigarette smokers. This difference is highly significant ($t=4.12$, $P < 0.001$). The mean age of pipe smokers was 66.5 years, which did not differ significantly from that of non-smokers.

Analysis of the patients' weights as percentages of those expected (*Geigy Tables*) showed such a large variance (from -31% to $+237\%$) that we could not use a parametric test. Rather we arranged the weights into five groups: $<0\%$, $0-4\%$, $5-9\%$, $10-14\%$, and $15\%+$. The rates of DVT in these groups (cigarette smokers first, non-smokers together with pipe smokers second) were: 20% and 30%, 20% and 53%, 25% and 35%, 0% and 30%, and 22% and 43%.

Although it may be true that cigarette smokers are younger and thinner than non-smokers, that is certainly not the whole explanation of the protective effect of this otherwise undesirable habit.

A V POLLOCK
MARY EVANS

Scarborough Hospital,
Scarborough, N Yorks

Investigating stroke

SIR,—Your leading article (10 June, p 1503) highlights the dilemma clinicians face now that accurate, non-invasive technical equipment with which to investigate stroke patients has become available, at least in some areas. As you say, this applies particularly to at-risk groups—diabetics, hypertensives, and the elderly in general.

While working in the department of

geriatric medicine at Northwick Park Hospital, Harrow, where a CAT whole-body scanner has been available for some years now, I reviewed all admission to the unit over a seven-year period to see what differences in presentation existed between patients with intracranial neoplasm and stroke. This formed part of a review of the experience of this acute geriatric unit in the presentation and clinical course of brain tumours in the elderly.¹

Twenty per cent of all admissions to the unit were diagnosed as having a vascular stroke, as defined elsewhere.^{2,3} This represents over 1000 patients. Only four of these were subsequently found to have a brain tumour—that is, 0.4% of all strokes. During the seven-year period 30 symptomatic brain tumours were confirmed, but the majority of these were correctly diagnosed in life, the exceptions being the four patients already referred to. I would submit that the correct diagnosis is nearly always suggested by the history. Progressive mental and/or focal neurological symptoms are the two most significant features in the elderly, while headache or epileptic seizures are far less common than is the case with younger patients.

Finally, whereas over 1000 strokes and 30 symptomatic brain tumours (primary or metastatic) occurred during the study period, it is remarkable that there were only four patients in whom a diagnosis of subdural haematoma was established despite the large number of patients in whom this diagnosis was considered. Many elderly people fall; fortunately, it appears that very few of them suffer subdural haematoma as a result.

C TWOMEY

David Lewis Northern Hospital,
Liverpool

¹ Twomey, C, *Age and Ageing*. In press.

² Geriatrics Committee, Working Group on Strokes. Royal College of Physicians, London, July, 1974.

³ Capildeo, R, Heberman, S, and Rose, F C, *British Medical Journal*, 1977, 2, 1578.

Organ transplantation and the fetal allograft

SIR,—Immunological studies may lead to the heart of a problem, but preceding clinical and experimental experience is not thereby rendered obsolete or irrelevant. Indeed it may assist immunologists.

Long ago it was shown that sensitivity could be abolished in a patient with tuberculosis by repeated small injections of tuberculin¹ and this did not diminish resistance to the disease. Similarly, the immunity conferred by BCG does not depend on the degree of tuberculin sensitivity induced in the individual.² The tuberculous mother becomes tuberculin negative during pregnancy,³ but resistance to tuberculosis is not diminished. For example, Cohen⁴ reported on 715 pregnant tuberculous women confined in a maternity unit for such patients and found that only 51 (7.15%) showed any evidence of regression, a figure no more and possibly less than would have been expected in a comparable group of non-pregnant tuberculous women. This unit was started in 1937 at Black Notley Hospital, Essex, and most of these women had no benefit from chemotherapy. Long-term follow-up of tuberculous women has shown that the effects of pregnancy have been beneficial and lasting.⁵ So also is the effect of pregnancy

at an early age on the later incidence of breast cancer.⁶

Therefore the letter from Mr J M Maxwell Anderson (29 July, p 355) may offer an analogy derived from the tenfold increase of α_2 -glycoprotein during pregnancy. There is a tenfold increase of oestriol in pregnancy which is associated with the immunological inertia of pregnancy. This inhibits the action of oestradiol. Are we therefore being offered an immunological explanation of a preceding valid clinical experience? Allergy was always a dirty word to those treating tuberculosis.

M C WILKINSON

Buckfastleigh, Devon

¹ Rich, A R, *The Pathogenesis of Tuberculosis*, 2nd edn, p 523. Springfield, Thames, 1951.

² P D'Arcy Hart, P d'A, Sutherland, I, and Thomas, J, *Tubercle*, 1967, 48, 201.

³ Scadding, J G, *Tubercle*, 1956, 6, 371.

⁴ Cohen, R C, in *British Obstetric and Gynaecological Practice*, ed A Clayl and A Bourne, p 537. London, Heinemann, 1963.

⁵ Lyman, D R, *Yale Journal of Biology and Medicine*, 1943, 15, 464.

⁶ Lemon, H M, *Cancer*, 1970, 25, 423.

Sjögren's syndrome, bromhexine, and tear secretion

SIR,—Dr K Frost-Larsen and others have presented the results of a clinical study (17 June, p 1579) from which they claim that bromhexine is valuable in the treatment of Sjögren's syndrome.

Sjögren's syndrome is, by definition, a condition in which the principal components are keratoconjunctivitis sicca, arthritis, and dry mouth. Only three of their 29 patients satisfied this definition. The only criterion for admission of the patients to the trial was a Schirmer test result of less than 10 mm in both eyes on two occasions. We note that their test was performed with the patients' eyes closed, contrary to the method described in 1903 by Schirmer and later by Duke-Elder.¹ Duke-Elder states that the Schirmer test is a "rough and ready test, without any pretence to accurate assessment, which only provides an indication of excessive lacrimation, marked hyposcretion, or an absence of tears." Pinschmidt² performed Schirmer tests on the normal eyes of his laboratory staff and found inconsistent and abnormal results which varied on retesting. Bijsterveld³ and Lachman and Hazleman⁴ also found the Schirmer test to give a poor indication of tear flow. The conclusion drawn by Dr Frost-Larsen and his colleagues that bromhexine stimulates lacrimal secretion is invalid because their Schirmer test readings were not suitable for statistical analysis. Lacrimal gland function is more accurately measured by the estimation of lysozyme in the tears⁵ and we have described a method of quantitative tear lysozyme assay.⁶

The authors appear to place emphasis on the effect of bromhexine on the break-up time of the tear film, but it has been shown recently that the tear break-up time is a misleading test.⁷ If anything, it is a test of the integrity of the microvillous system of the corneal epithelium which can be disordered by diseases which mimic keratoconjunctivitis sicca.

We were interested to read that some patients' symptoms of dryness resolved while they were on bromhexine. However, our experience has taught us that a patient's complaints of "dry eyes" cannot be considered

diagnostic as the concept of dryness is often conveyed to the patient at a previous consultation. We cannot understand why bromhexine should stimulate lacrimal secretion. Wright⁸ suggested that the drug was capable of influencing mucus production by the conjunctival goblet cells.

Notwithstanding our remarks we will be interested to investigate further this line of treatment because anything which mitigates the lot of the patient with keratoconjunctivitis sicca is very much worth while.

IAN MACKIE

Department of Ophthalmology,
St George's Hospital,
London SW17

D V SEAL

Public Health Laboratory,
Central Middlesex Hospital,
London NW10

¹ Duke-Elder, S, in *A System of Ophthalmology*, ed S Duke-Elder, vol 8, p 132. London, Kimpton, 1965.

² Pinschmidt, N W, *Southern Medical Journal*, 1970, 63, 1256.

³ van Bijsterveld, O P, *Ophthalmologica*, 1973, 167, 429.

⁴ Lachmann, S, and Hazleman, B, *Hospital Update*, 1975, 1, 617.

⁵ Mackie, I A, and Seal, D V, *British Journal of Ophthalmology*, 1976, 60, 70.

⁶ Mackie, I A, and Seal, D V, *British Journal of Ophthalmology*, 1977, 61, 354.

⁷ Vanley, G T, Leopold, L M, and Gregg, P, *Archives of Ophthalmology*, 1977, 95, 445.

⁸ Wright, P, *Transactions of the Ophthalmological Society of the United Kingdom*, 1975, 95, 260.

Rape and the laboratory: blood-grouping of hair

SIR,—Following the review of the laboratory examinations available for investigating allegations of rape in your leading article (15 July, p 154) may I draw your attention to recently published work which will significantly increase the evidential value of human hair examination in such cases?

The microscopic comparison of hairs from victim and alleged assailant is unlikely to be of significant evidential value unless there are gross dissimilarities between the hairs with respect to colour and structure, when it may be possible to make an exclusion on such grounds. Certainly, as you point out, a positive identity match is impossible. However, a feature of living hairs which have been forcibly removed from the scalp, such as may happen during the fracas accompanying a sexual assault, is the presence of sheath cells associated with the root of the hair. Indeed, the presence of such cells is often cited as evidence of a hair having been snatched or tugged rapidly from the scalp.^{1,2} We³ and independent workers in Japan^{4,5} have shown recently that such cells provide the basis for the blood-grouping of hair using the genetic variants associated with enzymes such as phosphoglucosyltransferase (PGM), 6-phosphogluconate dehydrogenase (6PGD), and esterase-D (EsD). These variants are easily demonstrated using conventional starch-gel electrophoresis on a single hair root.³ PGM is especially valuable as it divides the population into three common phenotypes, PGM 1, 2-1, and 2, with frequencies of 58%, 36%, and 5.5% respectively. In addition, it is possible to carry out the electrophoretic examination either before or after microscopy without loss of root morphology or other microscopic characteristics of the hair. The PGM variants may also be detected in pubic and chest hairs forcibly removed.

The blood-grouping of hair based on the ABO characteristics associated with the