mask with wrinkled forehead, there were tremors of the hands, the right worse than the left. She was walking with short shuffling steps, holding on to furniture indoors, and with a stick and the assistance of her daughter out of doors. Pro-, retro-, and lateropulsion were marked. She suffered from insomnia, and had great difficulty in turning over in bed. Her deep reflexes were increased. She was of high intelligence and spoke with a monotonous voice.

I began with intramuscular injections of 15 mg. of *d*-tubocurarine chloride in oil (30 mg. in 1 ml.), and worked up to 45 mg. On 15 mg. she had no reaction, apart from slight weakness which lasted for a day or two. On 45 mg. she had very severe side-effects, lasting up to seven days, when she was confined to bed, unable to get up owing to weakness, with a feeling of impending death, after which her condition was exactly as before the injection. On 30 mg. there was at times no reaction, but at others it was as severe as that obtained with 45 mg. The injections were always given in the same manner and into the same muscle. When the reaction was favourable (usually on 30 mg.) the clinical picture was as follows.

Four to five hours after injection her face became relaxed, she developed a bilateral ptosis and diplopia and a feeling of drunkenness which lasted from thirty minutes to two hours. Gradually a generalized weakness developed in all her limbs, which made it difficult for her to walk about even with assistance, so that she had to be confined to bed. She was off food, very drowsy, and slept well, and felt dispirited. This usually lasted for two days. At the end of this time her strength gradually returned and her walking improved. She felt better, started eating, and on the fourth day after injection she walked without support both in the house and out of doors, much to the amazement and wonder of her neighbours, who had not seen her walk without assistance for over four years. The pro-, retro- and lateropulsion phenomena were absent. I actually pushed her in various directions while she was walking and she did not lose her balance. She could turn over in bed with ease. There was, however, no change in her tremors. She was so delighted with herself that she walked about all day just for the sake of using her legs, like a child who for the first time discovers that it can perform some action and keeps on repeating it. This improvement lasted two to seven days.

I used the drug for three months, and at the end of that time the patient, although she had derived great benefit at times, refused the treatment, owing to the occasional severe side-effects.

I also treated a woman of 40 who had a residual right hemiplegia of four years' duration. Apart from walking better on the third day after injection, there was no change. Her side-effects were not as severe as those of the woman with Parkinsonism.

In both these cases my experience did not quite coincide with the findings of Drs. Clarke and Hotston in the following respects. (1) There was no diminution of side-effects after repeated injections. (2) The side-effects usually started within four to five hours, with one exception where severe reaction occurred in the Parkinsonian case within ten minutes. She developed bilateral ptosis and collapsed, remaining in that state for over two hours. (3) Both the unpleasant reactions and the beneficial effects lasted for days rather than hours. (4) Finally, I was impressed with the apparent unstableness of the drug, and with the unevenness of the reactions in intensity and duration both in the unpleasant and the beneficial effects obtained from an identical dosage, bottle, and technique.—I am, etc.,

Sheffield.

I. GOTTLIEB.

Louse-borne Relapsing Fever in Persia

SIR,—Drs. R. I. Bodman and I. S. Stewart (Feb. 14, p. 291) state that louse-borne relapsing fever has not previously been described in Persia. Actually louse-borne relapsing fever was described in Persia after the war of 1914–18 and the epidemic occurred about the same time as the then epidemic of typhus, also louse-borne. It is more than a coincidence that the first and second World Wars were followed by epidemic typhus and relapsing fever in that particularly lousy quarter of the globe. There was an epidemic of louse-borne relapsing fever in Shuster in 1942, which was diagnosed by my assistant Ali Hassan Assidi from blood films sent to Fields and later forwarded to me for confirmation.

In the case of tick-borne relapsing fever the tick—a species of *Ornithodoros*—lives in the dusty floors and cracked walls of mud dwellings and not on the person. Ticks are common enough in Abadan. The older medical missionaries—such as Dr. Shafter, of Ispahan—must have seen many cases of louse-borne relapsing fever in addition to the more common “Mianeh fever” the usual vector for which is *O. papillipes*.

Prof. Charles Oberling—author of the *Riddle of Cancer*—found cases of tick-borne relapsing fever in Tehran about 1942.

Generally the infective forms are numerous in blood films from louse-borne cases and are very scanty indeed in preparations from patients with the tick-borne disease. Blood films carefully stained with Leishman or Giemsa were adequate for diagnosis. It would be interesting to try the effect of penicillin on some of these cases.—I am, etc.,

Epping, Essex.

FRANK MARSH.

Injection Errors

SIR,—Mr. Harold Dodd (Feb. 14, p. 320) raises some interesting points regarding safety measures to be adopted with injection preparations. Undoubtedly much can be done to avoid errors by a rational and unambiguous system of labelling, and a committee set up by the Ministry of Health has recently published recommendations for the labelling of ampoules of anaesthetic drugs.¹

It appears to be generally agreed that it is desirable to avoid gummed labels on ampoules, and machines which will satisfactorily print directly on to glass are now available at reasonable cost. Use of this method would avoid the danger of labels becoming detached. A further advance would be made if commercial firms could be persuaded to use pharmacopoeial names in their labelling instead of coining new names for established preparations.

The suggestion of tinting a large number of injection preparations with different colours does not appear to be very practicable, since it would lead to the surgeon having to learn the colour of each preparation, and the method could not be applied to substances which have to be protected from the light by the use of amber bottles. Also, since the range of colour in suitable dyes is limited, the use of different shades might lead to confusion with those whose colour-perception is not acute.

With regard to the labelling of rubber-capped multiple-dose containers I suggest that the label should be headed “Injection Solution” or “Intravenous Solution” as the case may be, followed by the B.P. name in large letters. Solutions not intended for injection should never be placed in similar bottles to injection solutions, and local anaesthetics intended for topical use should be clearly marked “Topical Solution—Not for Injection.” In both the above cases the use of different coloured labels might be an additional safeguard.

I consider that the final essential in the avoidance of errors is to acquire the habit of deliberately checking the label of any drug used rather than relying on its appearance, and to discard any preparation when there is the slightest doubt about its identity.—I am, etc.,

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London, W.C.1.

¹ *Pharm. J.*, 1948, 105, 54.

T. D. WHITTET,
Chief Pharmacist

Pulmonary Embolism

SIR,—I have read the article by Mr. Norman C. Lake on “The Aftermath of Gastrectomy” (Feb. 14, p. 285) with considerable interest, but I must join issue with him on the problem of pulmonary embolism. The author disposes of this matter in less than six short lines and he shows an extraordinary disregard for all modern knowledge of the subject. He states that embolism “remains a bugbear” and that he knows no effective method of preventing it. This, I submit, is an astonishing statement in 1948, when one would hardly have felt it necessary to commend the work of our Swedish and American colleagues to his notice.

Mr. Lake states that “thrombosis usually arises in the abdominal wall or, as in two of these cases, from extension of thrombosis of haemorrhoids possibly produced by the administration of an enema pre-operatively.” These suggestions are surely preposterous, and it is not surprising that anyone believing them remains unaware of any effective method of preventing embolism. I understand that the late Lord Moynihan used to teach that emboli originated from vessels in the abdominal wall, although, so far as I am aware, he never offered any evidence in support of this view. Such hypotheses should now be condemned to the scrap-heap, where their arrival is long overdue; and to those who still favour these views I would suggest a few visits to the necropsy room, where, with the aid of a scalpel, they can soon dispel any remaining scepticism about the paramount importance of the deep veins of the lower limb as a source of post-operative embolism.

Active movements, early rising, prompt recognition of thrombosis in the calves, and abortive treatment with heparin