Cardiac Monitors

SIR,—May I support the letter published in your issue of December 8, p. 1545, advocating the use of circulatory monitors in anaesthetic practice? As I believe I originated the clinical pulse monitors now in common use in the United States and to a lesser extent in Britain and have used one for over a dozen years in routine anaesthesia I would like to make comments on their use.¹ Instruments do not relieve the pilot of an aircraft or an anaesthetist from the necessity for constant watchfulness. In both professions accidents are rare but the time available to take corrective action is limited to minutes or even seconds. Any simple method which can extend this time should surely be welcomed. It is true that when circulatory monitors are first used they can be distracting, especially if sound indicators are used, but with familiarity they become no more distracting than the instruments of a car. Routine use has convinced me that circulatory arrest is much commoner than is usually supposed, though its duration seldom exceeds 20 seconds and thus it is not noticeable to even the most careful anaesthetist. Marked bradycardia followed by a short period of circulatory arrest commonly follows succinylcholine injections in many children and some adults. Only last night I noticed gross cardiac arrhythmias, with a few seconds' arrest, after the use of 25 mg. of succinylcholine in a burned adult. A similar type of circulatory disturbance follows traction on the external ocular muscles during squint operations in children. Gross cardiac arrhythmias are readily seen after the use of adrenaline combined with a local anaesthetic in patients under cyclopropane, trichlorethylene, or halothane anaesthesia. Again, the short duration of the disturbance has led many to deny the association of this drug combination with cardiac arrhythmias.

But the criticism by Drs. R. E. Rawstron and B. R. Hutchinson of the design of many pulse monitors is justified. Several use the electrical activity of the heart as signal generators, giving a grossly misleading indication of the efficiency of the circulation; some use electronic amplifiers, which besides being unnecessary may oscillate and give a false signal, while one could detonate cyclopropane.

The type of apparatus which uses a transducer operated by pulsation of the finger or toe pulp offers the simplest, cheapest, and most reliable pulse monitor and has the advantage that electronic amplifiers are not necessary to produce a useful signal.

Those who commonly anaesthetize coloured patients and those who use hypotension find them essential.—I am, etc.,

St. Charles' Hospital,
London W.10.

V. J. KEATING.

REFERENCE

- ¹ Keating, V. J., *Brit. med. J.*, 1952, 1, 1188.

Mechanical and Electronic Apparatus

SIR,—I have just seen the letter from Dr. D. E. Pegg and Mr. R. E. Trotman (November 17, p. 1329). They refer to the difficulties of publishing detailed technical descriptions of medical equipment, and suggest that the establishment of a specialized journal would be a possible solution.

This solution is in sight, in the form of the new official organ of the International Federation for Medical Electronics—*Medical Electronics and Biological Engin-*

earing. One of the avowed purposes of this journal is to provide complete technical descriptions of apparatus and methods, which might otherwise receive a mere mention in a predominantly clinical journal.

The first issue of this journal, which is to be published by Pergamon Press, will appear in a few weeks' time.

May I also draw the attention of Dr. Pegg and Mr. Trotman to the Biological Engineering Society, which was formed some two years ago to promote the exchange of information and ideas between the medical and biological sciences on the one hand and the physical and engineering sciences on the other. The membership is drawn from industry as well as from hospitals and research institutes. The present secretary is W. J. Perkins, National Institute for Medical Research, Mill Hill, London N.W.7.—I am, etc.,

St. Thomas's Hospital,
London S.E.1.

A. NIGHTINGALE.

Jet Injection

SIR,—I have recently been interested in the use of a "hypo-spray" jet injector for the administration of vaccines, particularly to children. My authority is very interested in this method of administering vaccines, but we are anxious to obtain first-hand information from doctors who have used the jet-injection technique.

Before purchasing this equipment for use in clinics in the county, I would be grateful for information from doctors who have had experience of jet injection for the administration of vaccines and for their comments on the method, particularly in the administration of vaccines to infants and children of school age.

I would also like to see the equipment in use, and I presume that persons using the equipment would raise no objection to this if mutual arrangements could be made.—I am, etc.,

County Health Offices,
Mold, Flintshire.

G. W. ROBERTS.

Nursing-home for Nurses

SIR,—I am surprised at the difficulty I have had recently in finding a suitable home for a matron who, after a distinguished nursing career, now herself needs nursing care.

I am told that there is only one home for nurses who have become complete or partial invalids, and where they can obtain nursing care. Otherwise, as their financial position is normally restricted, they must be cared for in the chronic ward of a general hospital, or in a home for the chronic sick run by the local authority.

It is astonishing to me that our nurses should have no priority in this matter. Why cannot suitable nursing-homes be provided specially for nurses? Is the Government prepared to give financial support? Is this a sphere in which the Royal College of Nursing could help?

Surely this is an easy and practical field in which we can help our nurses. Those who have spent their lives helping others are entitled to adequate care and attention when they themselves become sick and infirm.—I am, etc.,

Oxted, Surrey.

J. H. LANKESTER.

Eosinophilic Lung Abscess

SIR,—In reading our article "Eosinophilic Lung Abscess—a New Entity" (June 30, p. 1810), it appears that Dr. Ghander (September 15, p. 737) unfortunately missed the evidence we put forward against the diagnosis

of co-existent tuberculous cavity in our case. "Cavity closure" was undoubtedly "quick." I must, however, emphasize that the Figs. 1 and 2 (p. 1811) show clearly the appreciable increase of the cavity on the left side with increased retention of fluid and air and this also occurred rather quickly. A comparable phenomenon to this is the tension or giant cavity in pulmonary tuberculosis which can develop as quickly as in our case. Swelling of the bronchial mucosa with eosinophilic infiltration and oedema is comparable to endo-bronchial tuberculosis, which is responsible for the development of tension cavities. The moderate degree of expectoration, which was in marked contrast to the size and contents of the cavity, adds to the justification of considering this as a tension cavity. There is more than one mechanism of cavity closure. A tension cavity can close by collapse after emptying of the contents when the bronchial obstruction diminishes or disappears, or it may heal by inspissation of the contents with the complete occlusion of the bronchus. The size of the cavity is much less important than the nature of its wall and the condition of the bronchus. A thin-walled cavity can obviously collapse quickly when the ball-valve mechanism of the bronchus disappears. Institution of specific drug therapy possibly removed the bronchial blockage in our case and allowed the collapse of the cavity which healed by scar formation.

Dr. Ghander also asks to know the details of the sputum which we mentioned to be of moderate quantity. In view of the diagnosis which we could so firmly establish, culture was not considered necessary. Moreover, complete clearance of the lesion with diethyl-carmabazine can reasonably exclude the possibility of any secondary bacterial invasion.

It might be of interest to mention here that the patient came again under my supervision only two months back. The radiological appearance was the same as that at the time of discharge.—I am, etc.,

Department of Medicine,
Medical College/Hospital,
Chittagong, East Pakistan.

N. ISLAM.

Risks of Smallpox Vaccination

SIR,—Professor G. W. A. Dick, in his interesting and persuasive paper (November 17, p. 1275), suggests that we should abandon routine vaccination in childhood and depend on the epidemiological control of smallpox which proved so successful during recent importations of the disease. On the day of the publication of Professor Dick's paper the Ministry of Health issued a circular (Circ. 27/62) advocating that routine vaccination should continue, but preferably be postponed until the second year of life. Before accepting either of these proposals I feel we should examine a little more closely the evidence which prompts them.

I reproduce here the first Table from Professor Dick's paper (Table I, p. 1275). The total number of vaccinations and of deaths are not given, so it is difficult to appraise the significance of the differing mortality rates in the various age-groups.

TABLE I.—*Mortality Per Million Primary Vaccinations—England and Wales, Scotland, and Part of Northern Ireland (1951-8)*

Complications	Age-group, Years			
	<1	1-4	5-14	15+
Generalized vaccinia ..	4.7	0	0	0
Post-vaccinal encephalitis ..	9.0	0	0	5.3
Others ..	1.7	1.9	0	0
Total ..	15.4	1.9	0	5.3

As I have no ready access to figures for Scotland and parts of Northern Ireland, I have analysed in some detail deaths following primary vaccination in England and Wales for the 10 years 1951-60.

In the memorandum of the Ministry of Health on smallpox vaccination¹ the Minister stresses certain contraindications: (1) Age—not earlier than 4 months. (2) Infantile eczema—an absolute contraindication. (3) Agammaglobulinaemia.

In constructing the Mortality Table below I have taken account of these recommendations.

The Table shows that 10 deaths occurred in infants vaccinated in accordance with the Minister's advice—that is, not under 4 months of age and not suffering from infantile eczema. To this must be added infants where no age is recorded, on the assumption that some or all of them were 4-12 months old. In this "No Age Stated" group are three deaths from encephalitis, one from generalized vaccinia, and two from generalized vaccinia associated with agammaglobulinaemia, a contraindication but a condition difficult to diagnose in infancy.

These 16 unavoidable deaths occurred associated with 2,671,488 primary vaccinations, a mortality rate of 5.9. This rate can only be approximate, as we have no knowledge of how many of the total vaccinations in infancy were in infants under 4 months of age. In children 1-4 years of age there were two unavoidable deaths, which represents a rate of 4.2 per million primary vaccinations, but figures in this group are so small they can have little significance (had there been three deaths the rate would have been 6.3 per million). In children 5-14 there were no deaths amongst the small number of vaccinations in the 10 years under review.

The present acceptance rate of 40% for vaccination of infants is achieved because vaccination is offered in the second 6 months of life whilst still attending the clinic. This procedure follows naturally a course of triple antigen. It is doubtful whether a satisfactory acceptance rate could be maintained in the second year.

TABLE II.—*Mortality After Primary Vaccinations, 1951-60*

	Total Primary Vaccinations, 2,671,488			Total Primary Vaccinations 477,052 1-4	Total Primary Vaccinations 264,316 5-14	Total Primary Vaccinations 416,513 15 and Over
	Under 1 Year					
	Under 4 Months	4-12 Months	Infants —Age Unknown			
Generalized vaccinia	A + A	E E	+ E E A A	E		
Encephalitis	+++++	+ +a+b+c +++++	+++	+		++
Other causes (hyperpyrexia— pneumonia)	++	++		+		

Key: + = Deaths following vaccination. A = Deaths following vaccination and associated with agammaglobulinaemia. E = Deaths following vaccination and associated with infantile eczema.

Notes on cases: * = Found dead in cot morning after vaccination. b = Vaccinated at 6 months, died aged 3 years, pneumonia and fits. c = Yellow-fever vaccine previous week. (From reports of Ministry of Health, Part II 1951-62.)