hospitals, but none of the Law Lords suggested that the Ministry is entitled to do this without making any payment to the patentees.

Section 46 of the Patents Act, 1949, secures that, except in certain precisely defined circumstances, a Government department invoking the Section must pay compensation to the patentee for their use of his patented invention. The Ministry of Health have never sought to contend that their exercise of the Section in obtaining tetracycline and certain other drugs for Health Service hospitals falls within any exception to the normal rule that compensation is payable to the patentee. On the contrary, spokesmen for the Ministry have from time to time admitted that compensation will be payable in this case, and it has been tacitly accepted by all concerned that the amount of this compensation would be negotiated after Pfizer's test action had been finally determined. Thus, the right to compensation was not in issue in the action, and was not pronounced upon by the House of Lords.—I am, etc.,

R. D. DOUGLAS,
Director,
Pfizer Limited.

Sandwich, Kent.

Safety with Parathion

SIR,—I was interested to read Dr. Dodge's account (19 December, p. 1593) of the pilot who crashed during aerial spraying with parathion. But surely atropine serves a specific purpose in parathion poisoning, and, when it becomes necessary to give it, it should be given in large (heroic) doses.

Three hours after the crash the pilot complained of "pain in the eyes and some disturbance of vision, and very soon after this began to perspire heavily and to vomit." Because the above syndrome coupled with a history of exposure to a heavy concentration of parathion is almost pathognomonic of poisoning with an organophosphorus compound, treatment at this stage should have been as follows:

(a) Make sure of an unobstructed airway.
(b) When the cyanosis (if any) has been relieved, *but not before*, inject 1/30 gr. or 1/15 gr. (2–4 mg.) of atropine intramuscularly.

(c) Put the patient in an ambulance (or motor-car) and transfer him to the nearest hospital. (I cannot see what objection Dr. Dodge has to "evacuation by road." If the drugs, the machinery for achieving passive ventilation of the lungs, and the professional skill were present, the pilot should have received their benefit. If not, nothing more tragic could have happened "on the road" than happened in camp.) During the journey repeated intramuscular injections of 1/30–1/15 gr. (2–4 mg.) should be given every 15 minutes. (It is amazing how much atropine a person severely poisoned with an organophosphorus insecticide can tolerate. Arnan¹ describes a case of poisoning with parathion during which the worker received 32 mg. (½ gr.) of atropine by intravenous and intramuscular injection in the course of seven hours. At the end of this time the only complaint was that of a dry mouth.)

(d) On arrival at the hospital the case should be transferred to the ward (or the respiratory unit, if there is one) and a prali-

doxime intravenous (protopam chloride, 1,000 mg. in 250 ml. saline) drip set up.

(e) Control convulsions (if any) by injecting sodium thiopental (2.5%) intramuscularly (or intravenously), or by a short-acting barbiturate (e.g., pentobarbitone).

Dr. Dodge mentions "chronic intoxication" with parathion. Other than a peripheral neuritis suggested by Bidstrup *et al.*² and Campbell,³ is there such a condition? Chronicity implies the persistent presence of an active pathogen in the body over months, often years, causing change and decay. Chronic poisoning with benzene,⁴ lead, manganese, and mercury⁵ are examples which spring to mind. Organic phosphorus insecticides are absorbed and quickly excreted in striking contrast to the chlorinated hydrocarbon group, the storage of which in the fatty tissues of the body may (in the case of dieldrin poisoning) be responsible for a fit (simulating an attack of epilepsy) long after exposure.—I am, etc.,

Klipfontein Organic Products Corporation,
Johannesburg, S. Africa.

JOSEPH B. LURIE.

REFERENCES

- 1 Arnan, A., *Bulletin W.H.O.*, 1962, 26, 109.
- 2 Bidstrup, L. P., Bonnell, J. A., and Beckett, A. G., *Brit. med. J.*, 1953, 1, 1068.
- 3 Campbell, A. M. G., *ibid.*, 1964, 2, 1658.
- 4 Browning, E., "The Latent Period in Industrial Disease" (Wyers Memorial Lecture, 1961), *Trans. Ass. industr. med. Offrs*, 1964, 11, 161.
- 5 ———, *Toxicity of Industrial Metals*, 1961. Butterworths, London.

Cardiac Arrest After Quadruple-strength Plasma

SIR,—The memorandum on cardiac arrest after rapid infusion of triple-strength plasma by Dr. J. S. M. Zorab *et al.* (9 January, p. 105) reminds us of this similar case.

Mrs. A. B., aged 42 years was a multipara, 33 weeks' pregnant. On 10 January 1963 she was well. Her blood-pressure was 140/80 mm. Hg, haemoglobin 80%, and weight 138 lb. (63 kg.).

On 11 January she suffered a severe, painless, antepartum haemorrhage. At 2.55 p.m. she was pale with a blood-pressure of 80/50 mm. Hg. 800 ml. of single-strength plasma was rapidly given, after which the pulse was 120/minute, the blood-pressure 110/70 mm. Hg, the haemoglobin 53%, and the plasma fibrinogen normal. She was treated expectantly, a further 400 ml. of plasma being followed by three bottles of blood (1,620 ml.). During eight hours the blood-pressure was maintained at 110/60 mm. Hg while the pulse decreased to 105/min. She was not shocked. Owing to the onset of labour, it was decided to examine the patient under anaesthesia. At 11 p.m. anaesthesia was induced with atropine 0.6 mg., thiopentone 250 mg., and Scoline (suxamethonium chloride) 100 mg. The patient was intubated and ventilated with nitrous oxide 66% and oxygen 33%. Paralysis was maintained with suxamethonium, and subsequently with gallamine, 120 mg. The blood-pressure fell to 80 mm. Hg systolic but later rose to 100/60 mm. Hg.

On examination forceps delivery was found possible. The stillborn foetus was immediately followed by the placenta, 1,120 ml. of clots, and 1,400 ml. of fresh blood. Ergometrine, 0.5 mg., produced firm uterine contraction; the genital tract was undamaged but bleeding continued. Hypofibrinogenaemia was diagnosed and later confirmed. While the uterus was compressed bimanually two bottles (1,080 ml.) of blood were given, followed by 400 ml. quadruple-strength plasma. The blood-pressure was now 80/50 mm. Hg, and bleeding stopped.

At 11.47 p.m., shortly after the plasma infusion, cardiac arrest occurred. External cardiac

massage was performed for five minutes and the lungs were ventilated with oxygen. Spontaneous heart beat then returned. The haemoglobin 36 hours after delivery was 43%.

The cause of cardiac arrest was unlikely to be vagal inhibition. Biochemical factors may have played a part, but were not demonstrated by the results of electrocardiography undertaken within a few minutes of cardiac arrest, laboratory investigations, although the ionized calcium was not measured and the blood was not taken until normal cardiac rhythm was restored. Anoxia, we feel, was the decisive factor. Alveolar oxygen should have been adequate. However, there was gross anaemia. There was also oligoemia, and a fall in cardiac output could have occurred producing a profound fall in the available oxygen. The injection of a viscous anoxic fluid might also have contributed to this.

In the management of this type of case we would stress the importance of the maintenance of the haemoglobin as well as the calcium and bicarbonate. Concentrated plasma is clearly suspect. It is in circumstances such as the above that it is frequently used. When used it should be given fairly slowly, blood loss being replaced with whole blood while haemorrhage is controlled by uterine compression.

We are grateful to Professor C. Scott Russell for permission to publish this case.

—We are, etc.,

D. H. G. COWIE.
R. KING.
City General Hospital,
Sheffield 5.

Voluntary Contributions to the N.H.S.

SIR,—I am afraid that Pertinax (27 February, p. 576) unintentionally may have misled your readers by his references to my article in the *Observer* (Sunday, 21 February).

In the first place I am not a "spokesman for the left." It is no part of my function as medical correspondent of the *Observer* to represent the views of a particular section of opinion. Secondly, I did not advocate direct contributions by patients for what they receive.

The suggestion I put forward is that the consumer might be enabled to supplement the Health Service while remaining part of it. He would contribute voluntarily. I gave the example of patients getting together to put up money to build a health centre for a group of doctors, or to provide a new service. This could be done, I pointed out, through the executive council—i.e., within the Health Service. People are ready, I think, to participate more directly in what is their own system of medical care, and to help the Health Service to higher standards for the benefit of the whole community.

If there had been space to elaborate my suggestion, Pertinax might not have been so pleased. For I believe that encouraging people to help in this way would strengthen the Health Service. In effect, one would be creating a consumer movement that could act as a "third force." What interesting possibilities might there be if the patients could speak their minds with one voice as loudly as the Minister of Health or the British Medical Association!—I am, etc.,

ABRAHAM MARCUS,
Medical Correspondent,
The Observer.
London E.C.4.