tion of moderate severity and α-haemolytic streptococci were cultured from the blood. Six hundred mg. (1 mega unit) of benzylpenicillin was given six-hourly by intramuscular injection. This was increased to 1,200 mg. six-hourly when the temperature did not settle quite to normal. Even so, low-grade fever persisted, and during the seventh week of treatment he developed a sore throat and generalized muscular pains. There was pronounced neutropenia (total white cells 2,300/c.mm. with 2% neutrophil polymorphs), slight anaemia (haemoglobin 11.0 g./100 ml.), and moderate thrombocytopenia (platelets 65,000/c.mm.). Penicillin was stopped, after which the temperature became normal, symptoms disappeared, and the haematological values rapidly returned to normal.

A second attack of infective endocarditis occurred in December 1966, and α-haemolytic streptococci were again cultured from the blood. Intramuscular benzylpenicillin was given for four days while waiting for sensitivity studies. His treatment was then changed to phenethicillin 1 g. six-hourly together with probenecid 1 g. six-hourly, because it has previously been shown by one of us[1] that oral therapy is effective and kinder to patients when the organism causing infective endocarditis is fully sensitive to penicillin. The temperature, which had quickly fallen to normal, rose again during the second week of treatment. Although serum levels of phenethicillin were high compared with the sensitivity of the infecting organism it was thought wise to return to parenteral treatment with benzylpenicillin. The leucocyte count fell slightly during the first three weeks of treatment. During the fourth week the patient became quite unwell, with generalized muscular pains, sweating, and sore throat. The pharynx was red, but there was no ulceration and no significant bacterial growth from a throat-swab. Haemoglobin was 11.1 g./100 ml.; leucocytes 800/c.mm. with 4% neutrophil polymorphs, platelets 275,000/c.mm. Bone marrow showed normoblastic erythropoiesis but absence of granulocytes beyond the myelocyte stage of development. Megakaryocytosis was normal. Penicillin was stopped, after which the temperature returned to normal within 24 hours. The leucocyte count rose to 5,500/c.mm. (62% neutrophil polymorphs) after three days and remained normal. After 30 days haemoglobin had risen to 12.5 g./100 ml., and apart from symptoms of the heart condition he has remained well.

Serological investigations: Erythrocytes—Group O rhesus positive, phenotype ccDE. Direct Coombs test positive. Eluate showed weak direct agglutination with pooled Group O red cells suspended in both AB serum and saline containing 40 mg./ml. benzylpenicillin at 0° C., 22° C., and 37° C. High titre agglutination was found using an indirect Coombs test with broad spectrum antihuman globulin, antiIgG, and antiIgM, again at all three temperatures. Similar results were obtained by testing the patient's serum with Group O cells treated with penicillin. Both serum and eluate reactions against penicillin-treated red cells were inhibited by previous exposure for 30 minutes to penicillin, IgM or IgG. There was no evidence of blood group specificity of the antibody present in the eluate or the serum. Thirty days after the penicillin was stopped the direct Coombs test was negative and no penicillin red cell antibodies could be demonstrated. Leucocytes: There was direct agglutination of two out of four leucocyte suspensions. All four suspensions showed agglutination by complement fixation techniques carried out by Dr. W. J. Jenkins at the N.E. Metropolitan Blood Transfusion Centre (unpublished). Addition of phenethicillin 10 mg./ml. or benzyl penicillin 7 mg./ml. caused no change in the strength of reactions using the complement fixation test. When the investigations were repeated 30 days after stopping penicillin therapy no agglutination could be demonstrated by either technique.

As in the previously reported cases, comparatively high doses of penicillin had been administered. The most striking feature of our patient was the occurrence of agranulocytosis on two occasions following penicillin and the demonstration of leucocyte antibodies during the second attack. As far as we are aware thrombocytopenia has not been previously observed.—We are, etc.,

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REFERENCE

1 Gray, I. R., Tai, A. R., Wallace, J. G., and Calder, J. H., *Lancet*, 1964, 2, 110.

Gas Mixtures for Calibration

SIR,—The accuracy of blood P_{O_2} and P_{CO_2} measurements by the electrode techniques depends, among other factors, on the accuracy of the gas mixtures used to calibrate the electrodes. As the preparation and analysis of these calibrating gas mixtures requires more skill than the operation of the electrodes, most users now purchase their calibrating gas mixtures. The demand for numerous individual cylinders of "special" mixtures is now very great; their preparation, analysis, and delivery are expensive. In our experience three gas mixtures greatly facilitate blood P_{O_2} and P_{CO_2} measurement by spanning the most important range for both gases; they are 4% CO_2, 13% O_2; 6% CO_2, 11% O_2; and 10% CO_2, 7% O_2. We therefore approached the British Oxygen Company with the suggestion that they provide these gas mixtures on loan stock. They agreed and undertook to prepare the mixtures with a tolerance of ±0.5% and, as an optional extra service, to supply a certificate of analysis stating the composition to ±0.05%. This note is to draw attention to this service and report the agreement between the manufacturers and our own analyses.

Ten cylinders of each gas mixture were received between November 1966 and January 1968, and analysed with the Lloyd-Haldane apparatus. Each cylinder was analysed in duplicate. Room air was analysed at each session and the results were as follows: CO_2 0.04%, S.D. 0.022; O_2 20.92%, S.D. 0.028 (n=23). B.O.C. analysed the cylinders either by gas chromatography or by the Bone and Wheeler absorption technique. All the cylinders supplied contained gas mixtures within the specified tolerance of ±0.5%. The comparison between the certificates supplied by B.O.C. and our analyses were as follows:

	CO_2	O_2
Mean difference	+0.048 (B.O.C. and R.P.M.S.)	−0.003
S.D. of difference	0.063	0.078
S.E.M. of difference	0.0115	0.014
Maximum difference	0.22	−0.18
P	<0.001	<0.5

The reason for this small but significant difference is unknown.

There was no significant difference in the agreement for either gas at any of the three nominal ranges.

The general use of these gas mixtures in cylinders on loan should save time and money. The user must decide whether to analyse the cylinders himself or to accept the manufacturer's certificate. If one assumes that our analyses gave the "right" values, acceptance of the values on the B.O.C. certificates would rarely have caused estimates of blood-gas tensions to be more than 1.0 mm. Hg "wrong." Whether the user analyses a cylinder or accepts the certificate it is wise to use the electrodes to compare a fresh cylinder with the old one before the old one is completely empty.

These gas mixtures are now available from British Oxygen (Special Gases Department, the British Oxygen Company, Deer Park Road, London S.W.19). We are grateful to Mr. R. C. Heape, Mr. J. Pennington, and Mr. J. H. Scawin for their enthusiastic collaboration.

—We are, etc.,

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REFERENCE

1 Lloyd, B. B., *J. Physiol. (Lond.)*, 1958, **143**, 5P.

Hereditary Quivering of the Chin

SIR,—I have been interested to read your leading article (20 July, p. 138) and the ensuing correspondence about hereditary quivering of the chin. I have this condition myself and so has my sister. My father, grandfather, and at least two of his sibs and his mother also suffered with this. We have all found it to be precipitated by rapid movements of the eyes such as playing table tennis or any ball game or watching birds flying, etc. It quite frequently occurs during sleep, and I have many times been woken up by an attack. It has been most troublesome in childhood and puberty, attacks tending to become infrequent and shorter in duration with age, although different members of the family have been affected more badly than others.

I am at present trying to compile our complete family incidence, and would appreciate being informed by any other affected persons or by their doctors if they have any patients with this complaint.—I am, etc.,

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Cerebral Malaria

SIR,—It was with great interest that the preliminary communication entitled "Use of Dexamethasone in Cerebral Malaria," by Professor A. W. Woodruff and Dr. C. J. Dickinson (6 July, p. 31), was read at the 93rd Evacuation Hospital, Long Binh, Viet Nam.

During the past 10 months we have been accumulating 50–80 falciparum malaria cases monthly, with 1–2 cerebral malaria cases per month. Dexamethasone has been part of the standard treatment, along with intravenous quinine. There have been no fatalities re-