directly on the myocardium. There is a further depressant action to the cardiac vagus (Way and Ligon[5]). The rapid excretion of the pethidine, as indicated by the very low urinary and serum levels at the 36th hour, conforms to the expected pattern (Donatelli and Di Lollo[6]). As in Romer's case, the pupils were small, and there was no vomiting. On further investigation, we found that the patient's pethidine tablets each contained 50 mg. of this drug, and that he had therefore taken 2,000 mg. of pethidine, the largest recorded single dose ever taken. Cohen's patient[7] took 1,250 mg., and Romer's 1,500 mg. All three patients recovered.

We are much indebted to Dr. R. G. M. Longridge, in whose care the patient was, to Dr. L. H. D. Thornton for his advice, and to Mr. H. B. Salt for his help and details of the pethidine estimation.—We are, etc.,

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Primary Red-cell Aplasia

SIR,—We have read the article on a case of primary red-cell aplasia by Dr. Michael Donnelly (February 21, p. 438) with great interest, as we have an almost identical case under our care at present.

A male infant, now 10 months old, was first seen at the age of 13 weeks, when a blood count showed haemoglobin 17% (2.52 g.%); red cells 610,000; leucocytes 4,000, with 25% polymorphs. In the stained film the red cells showed anisocytosis, poikilocytosis, and macrocytosis, and occasional normoblasts were found. Pregnancy and delivery had been normal and there are two other healthy children. Father and mother are healthy but elderly, and there is no family history of anaemia. Treatment with oral iron, vitamin B_{12}, and ascorbic acid produced no improvement, and several blood transfusions were given, the haemoglobin falling regularly after each transfusion. Apart from the anaemia the infant remained cheerful and well and continued to gain weight.

On admission to hospital for further investigation on October 24, 1952, a blood count showed haemoglobin 40% (6.3 g.%); red cells 2,100,000; leucocytes 18,900, with 74% polymorphs. Reticulocytes 1%. Blood group O rhesus negative, with no incompatibility between infant's cells and mother's serum (group O rhesus positive) by indirect Coombs test. Bone marrow (iliac crest) showed an extremely cellular marrow with marked myeloid hyperplasia. Red-cell precursors were virtually absent, a few polychromatic erythroblasts being found only after prolonged search of several preparations; the Wassermann was negative and chest *x*-ray examination and urine were normal. Since then the infant has been readmitted on several occasions for further blood transfusions. Two further examinations of bone marrow have shown a complete absence of red-cell precursors in a cellular myeloid marrow. Reticulocytes can no longer be demonstrated in the peripheral blood. The infant has remained well apart from a recent upper respiratory tract infection with early bronchopneumonia. This responded normally to penicillin and chloramphenicol.

In this case one must conclude that some functioning erythropoietic tissue was present up to the age of 6 months, as both normoblasts and reticulocytes could be found in the peripheral blood. Since then the absence of reticulocytes in the blood and the complete absence of red-cell precursors in the bone marrow would suggest that all erythropoiesis has now ceased in this patient.—We are, etc.,

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P. KIDD.

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Vitamins and the Boat Race

SIR,—It transpires from the columns of a well-respected national daily newspaper that the training regime of the Cambridge boat crew includes taking vitamin pills. Vitamins are an essential treatment of vitamin-deficiency diseases and are especially valuable when there is fear of vitamin deficiency, such as in early childhood or during pregnancy. I think it unlikely that the Cambridge crew will fit into any of these categories.

The amount of energy, labour, material, and advertising designed to persuade the public to consume, and the medical profession to prescribe, a daily dose of vitamins of various kinds is phenomenal. The argument runs somewhat like this: "Pain in the little finger is an early sign of vitamin-blank deficiency. Therefore, anybody who ever gets a pain in the little finger should take vitamin blank daily. Even if you haven't got a pain in your little finger vitamin blank taken daily will prevent you getting one." It is also unfortunate that the word vitamin should suggest that it is somehow connected with giving vitality.

An official statement from an authoritative source on the limitations of vitamins would not come amiss. In its absence I will stick my neck out with the following pronouncement. A daily supplement of vitamins is valueless to the normal adult. In particular there is no evidence to show that it will prevent coughs and colds (American papers, please copy). The high-dosage vitamin treatment of certain diseases where the vitamin is used like a drug is of course an entirely different subject.—I am, etc.,

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London.

Effect of Isoniazid on Carbohydrate Metabolism

SIR,—In view of the article by Dr. G. R. W. N. Luntz and Mr. S. G. Smith (February 7, p. 296) on the association between carbohydrate metabolism and isoniazid therapy, the following case report may be of some interest. The patient apparently developed diabetes mellitus during a course of isoniazid therapy for pulmonary tuberculosis. Cause and effect have not been proved, however, and the case is presented without comment.

A male, aged 36, with no family history of diabetes mellitus, first reported at a general medical out-patient clinic with dyspeptic symptoms on June 16, 1952, and was found to be suffering from pulmonary tuberculosis. *X*-ray examination showed infiltration and cavitation in the right upper lobe, calcium deposits at the right hilar region, and soft mottling, especially peripherally, throughout the left lung. Acid-fast bacilli were found in direct smears of his sputum. Urine contained no albumin, and Benedict's test did not reveal any reducing substance. He was transferred to the care of the Hammersmith Chest Clinic and admitted to the ward on July 11, where he was accepted for the current M.R.C. chemotherapy trial.

On July 19 chemotherapy was commenced with streptomycin 1 g. daily by intramuscular injection and isoniazid (given as "nydrazid," Squibb) 100 mg. twice daily. This was continued for three months to a total dosage of 94 g. streptomycin and 18.8 g. isoniazid. Both clinical and radiological improvement occurred on this regime, and it was felt that chemotherapy could now be suspended and that the patient should remain under close observation on bed rest alone pending admission to sanatorium for probable surgery. The urine contained no albumin, and weekly testing with Benedict's solution revealed no reducing substance from July 11 to September 14, but on September 21, during the course of treatment, when 65 g. streptomycin and 13 g. isoniazid had been given, it was first noticed on ward test that the patient's urine turned Benedict's solution yellow. Ward tests on succeeding days produced colours varying between green and orange. On October 2 a glucose tolerance test was performed and resulted as follows:

	Blood Glucose (mg./100 ml.)
Before glucose	264
½ hr. after	406
2 hrs. ,,	330
2½ ,, ,,	292

Before glucose ingestion, 45 ml. of urine contained 3.7 g. glucose. Two hours after ingestion, 47 ml. of urine contained 3.1 g. glucose.

Isoniazid therapy was maintained until the end of the three months' course of treatment, but the patient was placed on a 200-g. carbohydrate diet and P.Z. insulin 18 units daily. At the