

during this time been brought home to defect in colour vision? Has any railway servant found by Holmgren's test to have defective colour vision been confronted at night with red and white lights and failed at once to distinguish one from the other, and to state correctly which was white and which was red? Has any similar fact been established as to red and green lights in the case of sailors? Perhaps I should have used the plural, because if the statements as to that which may be true are true, there should by this time be abundant evidence of the fact.

I am, Sirs, yours faithfully,

Queen Anne-street, W., Feb. 26th, 1895.

W. R. GOWERS.

## "HOSPITAL SMALL-POX INFECTION."

To the Editors of THE LANCET.

SIRS,—Under the above heading at p. 361 of THE LANCET of Feb. 9th you refer to the occurrence in 1893 of two cases of small-pox amongst the patients in the scarlet fever pavilion of the Stockport Isolation Hospital, the first of which was primarily attributed to the fact that a cat secretly kept in the scarlet fever pavilion had visited the small-pox pavilion, though both cases were ultimately believed to be the result of direct communication between these pavilions by means of a tunnel or subway, 77 ft. in length, for the heating pipes, the existence of which was subsequently discovered. In questioning the soundness of this conclusion you object that: 1. "Nothing is said as to the condition of the patients as to vaccination." Your point is not quite clear to me, but the facts are as follows:—Case 1: Aged two years and a half; admitted Jan. 13th; papular rash Feb. 15th. Two rather faint vaccination marks on the left arm, each slightly smaller than a threepenny piece. Small-pox well marked and ended fatally on Feb. 18th. This child had a tuberculous knee-joint with sinuses. Case 2: Aged seven years; admitted Jan. 23rd; papular rash Feb. 28th; three good vaccination marks on left arm almost exactly the size of a sixpenny, a shilling, and a halfpenny piece respectively. This patient on admission was suffering from diphtheria, and was isolated in a separate small ward of the scarlet fever block. This small ward freely communicated with the scarlet fever ward proper, and this child when convalescing from diphtheria developed scarlet fever, and was then put in the scarlet fever ward in which Case 1 and several other children were under treatment. Upon the occurrence of Case 1 all children over seven years of age in the scarlet fever pavilion were at once revaccinated, with the single exception of Case 2, whose marks were so large and good that her revaccination was not considered necessary. 2. You suggest that Case 2 may have derived its infection from Case 1. This is of course possible, and even probable judging from the dates, but it does not, I submit, in any way weaken my contention as to the mode of primary introduction of infection to the pavilion. 3. You say: "And, again, may not both cases have derived their infection aerielly?" Certainly, I have not the least doubt that they did so—Case 1 directly from the small-pox pavilion through the underground passage, and Case 2 either in the same way or from the air of the ward infected by Case 1. The odour of oil of peppermint poured with boiling water into the aperture of exit of the heating pipes in the small-pox pavilion quickly pervaded the whole of the scarlet fever pavilion, and this, together with the significant fact that no further case of secondary small-pox occurred after two brick partitions faced with cement concrete had been built across the tunnel of communication, leaves no doubt whatever in my mind as to the part played by the tunnel in question.—I am, Sirs, yours faithfully,

Stockport, Feb. 20th, 1895.

CHARLES PORTER.

## "ANÆSTHESIA BY THE CHLOROFORM AND ETHER MIXTURE."

To the Editors of THE LANCET.

SIRS,—Allow me briefly to reply to the kindly comments on my paper with the above heading made by two skilled anæsthetists. I have repeatedly heard it alleged that in giving a mixture of ether and chloroform in an inhaler you are working with a vapour composed of the same proportions of its constituents as exist in the liquid form. It was to show the fallacy of this belief that I made the researches detailed in my paper. I there proved that in working with such a mixture you were giving an inhalation varying continually in the relative percentages of its constituents, and I

expressed my belief that to use such a mixture was unscientific and unsafe. When dealing with lethal weapons let us know at least what we are using. I should not like your readers to infer that this mixture is, as one of your correspondents suggests, my mixture at all. I have seen it much used here and I have heard of it being largely used elsewhere, but, of course, the A.C.E. mixture is the much more commonly used one. I had this mixture in my mind's eye, but expressly avoided examining residues from such for the following reasons. 1. If variations in the strength of inhalations were shown to result from mixing two liquids, *a fortiori* would you get such variations from mixing more than two together? Let us always begin by the simpler hypothesis. 2. As algebraists well know, to calculate values of X and Y is an easy matter; to calculate values of X, Y, and Z is far more arduous. The relative amount of ether and chloroform can be easily calculated from the specific gravity. In the case of three liquids soluble in each other it is possible, perhaps, to calculate the percentage of each from the volume and density, but it is a task beyond my powers. The three might be separated by fractional distillation; or an estimation might be made by distilling off the ether by a gentle heat and oxidising in half the residue the alcohol into acetic acid and titrating with alkali, whilst in the other half the chloroform would be converted by boiling with caustic potash into chloride and formate of potassium. These methods would take a considerable time—much more than I could well spare.

As to what would most likely take place with the A.C.E. mixture in a Clover's inhaler, the relative rate of the three constituents are: alcohol 100 ether 78.7, and chloroform 62. Ether boils at 35°C. (95°F.), and will generally be gently boiling in a Clover if the room is warm—warm as operating rooms usually are. The boiling points of chloroform, 62.7°C. (145°F.), and alcohol, 78.5°C. (173°F.), are too high to enter into the question. The low boiling point of the ether would probably compensate for its less diffusion power as compared with alcohol, and the two vapours might to some extent correspond in amount to each other. The chloroform, handicapped by its low diffusion rate and having no low boiling point to help it onwards and upwards, would linger longer, becoming stronger and yet stronger, until at last, like Astræa, "ultima terras relinquit." My conclusion is that when mixtures are administered homogeneity of inhalation is only possible when the anæsthetic is added by drops on to the face of an open mask; that, in fact, mixtures should not be given in a closed inhaler.

I am, Sirs, yours faithfully,

Derby-road, Nottingham, Feb. 23rd, 1895. EDGAR B. TRUMAN.

## BEAVEN RAKE MEMORIAL FUND.

To the Editors of THE LANCET.

SIRS,—Will you kindly allow us to inform your readers that the subscription list of the above will be closed next month, and that it has been decided to spend part of the money in the erection of a memorial tablet in Guy's Hospital Medical School and to hand the balance to Dr. Rake's widow and children. It may have been supposed that the latter were sufficiently provided for under the will of the elder Dr. Rake; we therefore wish to say that the small extent to which they become beneficiaries was known to us, and that the whole question was considered at two meetings of the committee before the appeal was drawn up which you kindly inserted in your columns. The treasurer of the fund, Dr. Pye-Smith (48, Brook-street, W.), will still be glad to receive contributions from other friends who appreciated the character and work of the late Dr. Beaven Rake, but who have not yet subscribed to the memorial.

We are, Sirs, yours faithfully,

PHIN. S. ABRAHAM

GEORGE A. BUCKMASTER

ALFRED RAKE.

} Hon. Secs.

## THE CHELSEA HOSPITAL FOR WOMEN.

To the Editors of THE LANCET.

SIRS,—Not having been re-elected to the post of anæsthetist to the Chelsea Hospital for Women, I feel I should like, with your permission, in justice to myself to state the circumstances of the case. When the staff resigned in consequence of the report of the Committee of Inquiry, as no questions of the anæsthetic work of the hospital had been raised it did not seem necessary for me to resign my post. In December,