COLOUR-BLINDNESS IN THE MERCANTILE MARINE.

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THE honourable member for Oxford University, Mr. Talbot, at my solicitation, moved, just before the close of last session, for a further return of the results of the colour-blind test-examinations of candidates for masters and mates certificates in the Mercantile Marine Service. This return has recently been presented to Parliament. It contains many facts of interest and importance to the public and to the profession. I propose, therefore, to lay before the readers of this JOURNAL some of the more salient points of the report, and the means taken to prevent colour-blind persons, masters and mates, from obtaining certificates of competency to navigate British ships.

The colour-test examination was, on the representation of the profession, established by the Board of Trade eight years ago, in May, 1877. Its value soon became manifest to those in authority, and soon afterwards, in 1880, it was made compulsory upon all masters and mates to undergo an examination, and obtain a certificate of their ability to distinguish colours, before proceeding to the examination in navigation and seamanship. It was further extended to all persons about to enter the Mercantile Marine, as a means of satisfying themselves as to their fitness to enter the service at all; and for the certificate given a small charge of one shilling is made.

The methods of applying colour-tests are, for the most part, of three kinds; coloured cards, wools, and glasses. These have been found, on the whole, sufficient for the purpose, as the examiner has no need to discover and record all the peculiarities of vision, or of the colour-sense, of the candidate, nor of his ability to detect and arrange all the varying tints of the spectrum; his object being to discover whether he can distinguish those colours which enter largely into the combinations of signals used by day and night at sea; that is to say, whether he can clearly see the difference of red from green, and of both from white or black.

Failure to pass in the colour-test was equivalent to that of failure to pass the ordinary examination in navigation and seamanship. That is, it prevented candidates from obtaining the higher certificates of mate and master. This regulation was found to be unduly prejudicial to those who had already been some years in the service; and in March, 1880, a modified mode of procedure was adopted. The candidate already in possession of a certificate of competency of a lower grade, and wishing to procure one of a higher grade, is now permitted to do so; and if not successful, after two or three trials, in passing the colour-test, a certificate is granted, but the examiner writes across it: "the holder has failed to pass the examination in colours." This no doubt often has the effect of preventing the person from obtaining employment, but it is only right and just that shipowners should be in a position to protect themselves in such a case.

But, remarkable enough, although the colour-test examination is obligatory upon all officers, masters, and mates of the mercantile marine, pilots are, by some oversight, altogether exempted from so good a rule. This must be regarded as a serious omission, as there cannot be a doubt that collisions at sea occur more frequently when pilots are in charge, off our coasts, than when ships are out at sea, and in charge of the master or captain. If the compulsory colour-test examination were extended to pilots, a large number would no doubt be found unfit for the service, by reason of their being colour-blind.

As to the results obtained during the past four years to which the return is confined, from the year 1880, when the colour-test was more rigorously enforced, I find there were 85 candidates rejected by the examiner. Of this number, 29 applied to be re-examined under the rule referred to above, and all of these ultimately obtained certificates. Most of them, however, were re-examined in provincial towns, and were certified as able to distinguish between red, and green, and white lights. Besides these 85 failures, there were also 55 failures in examinations for colours only. This I take to mean that a number of persons voluntarily offered themselves for the colour-test certificate before going to sea at all, and paid their shillings to satisfy themselves of their inability to distinguish the colours of the flags and lights in use.

Other questions of interest "to the curious or learned in the matter of colour-blindness" are referred to, but not discussed, in the report. In an appendix, however, many typical cases of complete and incom-

plete colour-blindness are given. But, by an unaccountable oversight, the proportion or percentage of the colour-blind to the total number of persons examined has been altogether omitted. In the former report, that of 1877 and 1878, it was given at .43, or rather less than half per cent., a much smaller percentage than that of any other class of men, indeed, as small as that of women. The subjoined summary shows the mistakes made by the 86 candidates in naming colours.

Colours of Cards, Wools, or Glasses.	Green.	Red.	Yellow.	Blue.	Other Colours.
Green described as	—	79	16	13	13
Red	24	—	3	3	3
Yellow	9	38	—	1	2
Blue	45	2	1	—	4
Black	4	2	—	—	3
White	3	1	—	—	—

Some amount of trouble was taken by the Board of Trade to determine the practice of foreign countries with reference to their colour-test examinations; and, from the replies received in 1881, we find that the United States of America, in 1879, made the colour-test compulsory upon pilots only, while for masters, mates, and crews it remains voluntary. The daylight colour-tests in use are Holmgren's worsteds, and for night, coloured signal-lights.

With regard to the principal European countries, Austria and the Netherlands are the only nations that have introduced a colour-test into their mercantile marine, while France and four other nations use a colour-test for their state navies only. Belgium has instituted a compulsory examination for persons employed in mail-boats running between Dover and Ostend. In addition to the usual tests, the Flushing pilots are examined by artificial means, different shades of colour being thrown upon a black background. Ostend pilots have a number of pieces of wall-paper, or skeins of wool, placed before them, and these they are directed to group into the colours of the spectrum.

After due consideration of the various modes of conducting the examinations by other nations, the Board of Trade came to the conclusion "that there was nothing in the colour-tests, or mode of applying them, as adopted by other countries, which, for practical purposes, is an improvement upon those in use in this country." But while it is thought to be undesirable to make any alteration in the method of applying the colour-test, or making it more searching or elaborate, in the public interest it is certainly desirable to apply it more generally. It does not admit of a doubt that an examination in colours is needed not only for officers, but for pilots, and for men who are on the "look out." This remark applies with equal force to these officers, masters of ships, who obtained certificates before the colour-test examination was instituted for our mercantile marine, and who, from colour-blindness, may be unwittingly and ignorantly risking the lives of their crews, and yearly adding to the number of lost ships. But for the great apathy displayed by shipowners themselves, this, we learn, would have been done long ago. Shipowners, however, still affect a disbelief in the danger which is associated with colour-blindness. Ignorance and a settled determination to reject all proof in this particular stands, as usual, in the way of adopting preventive measures.

It is known to but comparatively few persons that colour-blindness affects the human race in different degrees, is hereditary, is an incurable physical affection, and is chiefly confined to the male branch of families; the average percentage being $3\frac{1}{2}$ to 4 per cent. of males, and only 0.5 per cent. of females. A selected instance or two will serve to impress this fact upon the memory. In a family of seven children, four sons and three daughters, the eldest and youngest of the sons are colour-blind. The defect is inherited from the grandfather, through the mother, but neither the mother nor any other member of the family is colour-blind. In a family of five, three sons and two daughters, the three sons inherit colour-blindness through their father and grandfather, while the two daughters, and, indeed, the whole of the females of this family, are free from any colour-defect.

The question has been asked, and I believe has not been answered, is colour-blindness likely to increase with age? A few carefully recorded cases lead me to think that age does aggravate the defect, as it does certain other defects of vision. It undoubtedly becomes more pronounced as the near point of vision recedes. In the case of Mr. D. B. C., who, at the early age of 14, went to sea, and who, five or six years afterwards, consulted me before he applied for his certificate as third mate, I pronounced him red colour-blind; nevertheless, he obtained his certificate, and subsequently those of second and third

mate; but when, at the age of 26, he applied for his master's certificate, he was unable to pass the colour-test. At this date, I once more tested him for colour, and on referring back to my notes of an earlier date, I came to the conclusion that his colour-blindness had sensibly increased. Captain F. consulted me for a disturbed state of vision, tobacco amaurosis. His colour-sense was also very imperfect; but, as he soon recovered, I saw no more of him for nine or ten years, when he one morning called upon me, complaining of defective sight, and of an inability to distinguish the ship's light. He was then very uncertain about his greens; dark greens he called black, and dark reds were simply warmer colours than greens. In short, he was colour-blind. Soon afterwards, he retired from the service.

The next case is more strikingly corroborative. H. J., a lad aged 16, myopic, before going to sea, was examined at an ophthalmic hospital, and pronounced free from colour-blindness. On his return home, he passed the colour-test examination, and obtained his certificate. Four years afterwards, his father brought him to me. He was then complaining of his inability to distinguish the colour of the ship's signal-lights, and he often missed the ropes; this he attributed to his short sight. He was unable to select or sort the skeins of coloured wool; in short, he was completely colour-blind. I recommended him not to go up for his second examination. His friends thought otherwise. He was rejected, and his certificate was endorsed "colour-blind." This, of course, put a stop to his further career in the service. The father of this patient was not colour-blind, but he was unable to say whether his father or grandfather had suffered from any defect of vision. The myopia must have been transmitted.

The object I have in view in dwelling upon the hereditary nature of colour-blindness is that of enforcing a duty upon parents—one they owe to themselves and to their children—that of making due inquiry into every peculiarity or defect of sight which may have constituted a family failing, before yielding to the wish of a child for a seafaring life. The inability of a boy to distinguish colours in common use should at once determine the question of his taking to the sea at all.

In conclusion, I would say, in answer to the question put by the Assistant-Secretary of the Marine Department of the Board of Trade, as to what more can the Board do to make the colour-test more efficient than it is at present; make, by all means, the examination compulsory upon all officers, pilots, and men on the "look-out;" if you do not, then, in the event of loss of life and property by collisions at sea, public opinion will naturally condemn the Board for permitting any laxity of the colour-test examination, and which should be more stringently enforced and applied than it is at present.

THE BRITISH MEDICAL TEMPERANCE ASSOCIATION.—The annual general meeting of the British Medical Temperance Association was held on Tuesday, May 26, in the rooms of the Medical Society of London, Chandos Street. Dr. B. W. Richardson, F.R.S., presided. The annual report stated that there were now 309 members and forty-two associates, the former being registered practitioners and the latter students, all personal abstainers. An Irish branch had been successfully established, and a branch for Scotland was just about to be inaugurated. For the 100 guinea prize offered by the Council for the best essay on the physical and moral advantages of total abstinence from intoxicating liquors, thirty-nine essays had been received, which were now in the hands of the judges, namely, the Right Rev. the Lord Bishop of London, Dr. B. W. Richardson, R. Webster, Esq., Q.C., Dr. Norman Kerr, and Dr. J. J. Ridges. It is intended to declare the result and to present the prize at a meeting of medical students in October next. After the usual business Dr. Richardson made a communication on recoveries from alcoholic paralysis under total abstinence, and Dr. C. R. Drysdale read a paper entitled "A Medical Reply to Lord Bramwell," which was followed by a discussion.

BEQUESTS AND DONATIONS.—Mrs. Ann Bell, formerly of Hollins, near Whitehaven, but recently of Rose Hill, Putney Park Avenue, has bequeathed £1,000 to the Whitehaven and West Cumberland Infirmary and Fever Hospital, £1,000 to the Royal Hospital for Incurables at Putney Heath, £500 each to the Royal Infirmary, Liverpool, the Northern Hospital, Liverpool, and the Southern Hospital, Liverpool, and £200 to the Ladies' Charity, Whitehaven.—Mr. Robert Barbour, of Bolesworth Castle, Cheshire, has bequeathed £500 to the Chester General Infirmary.—The Newark Hospital and Dispensary has received £300 under the will of Mrs. Arabella Tatham, of Torquay.—The General Infirmary, Leeds, has received £100 under the will of Miss F. M. Spencer Stanhope, and £100 under that of Miss M. A. Spencer Stanhope, both of Banks Hall, Barnsley.—Miss Mitchell has given £350 to the National Hospital for Consumption at Ventnor, in remembrance of her mother.—The Yorkshire Football Club have given £150 to the General Infirmary, Leeds, and £75 to the Halifax Infirmary.

CLINICAL MEMORANDA.

THE INDUCTION OF PNEUMOTHORAX FOR HÆMOPTYSIS.
In the report of Dr. Cayley's case, and the discussion which followed at the Clinical Society, in the *BRITISH MEDICAL JOURNAL* of May 16th, two points escape notice, though, doubtless, they were fully considered by Dr. Cayley in estimating the propriety of the treatment for hæmoptysis employed.

The first is the significance of the degree and character of the pyrexia observed. Although the evening temperature ranged only between 101° and 101.8° Fahr., this, being in association with attacks of hæmorrhage exceptional in their frequency and severity, could not safely be taken as a measure of the activity or extent of the morbid processes in the lungs, as the fever would most likely be modified by the depletion which occurred. The remittent type of pyrexia present, also, was significant rather of progressive tuberculosis than of changes depending on the presence of blood in the alveoli and bronchioles. Hence the fever, though slight, was suggestive of "active development of tubercle in progress."

A more important question, however, in relation to the treatment, was the effect which inducing collapse of one lung would have on the work of the right side of the heart. In the presence of extreme anæmia, associated with pulmonary tuberculosis, the likelihood of the heart-muscle being equal to the increased demand on it, merited as serious consideration as the question of the sufficiency of the residual aerating surface. Had disseminated tuberculosis been suspected, it would no doubt have been regarded as prohibitive of the operation; for, whatever be the explanation, such cases are more apt to end suddenly by cardiac failure than cases of more localised, though apparently greater, lung-affection.

While admitting, then, that the gravity of the patient's condition, and the failure of all ordinary hemostatics, in Dr. Cayley's case, warranted the consideration of exceptional measures, it cannot be denied that the experience of this case is adverse to the adoption of a similar plan of treatment, under like circumstances, in future.

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VARICOSITY OF THE LINGUAL VEIN AS A DIAGNOSTIC MARK.

SINCE my article with the above title appeared in the *JOURNAL*, there have been two communications on the subject which call for notice. The one, by Dr. Whitehouse, related a case where this state was associated with recurrent epistaxis and a history of a paralytic seizure. The other, by Dr. Atkinson, gave objections to this condition being of semeiological value. It was not intended to be deduced from my observations, as has been done in the latter paper, that this appearance implied atheroma. It was, however, inferred that it implied a tendency to stasis in the whole jugular system; and this, existing in the cerebral veins, is one of the factors of thrombosis and hæmorrhage. The facts quoted by Dr. Atkinson—namely, its large size and its feeble support externally—are reasons why this remora should make itself manifest in the lingual veins by varicose dilatation. That it is a condition not confined to them is indicated in Dr. Whitehouse's case, where epistaxis showed a congested nasal mucous membrane; while the frequently co-existing enlarged veinlets in the cheeks and lips show a similar tendency in the branches of the facial veins; and the view that this should coincide with a similar state in the internal veins is supported, along with other facts, by the experiments of Burrows. Such a concomitant change as this must surely be a more delicate indication than the enlargement of the anastomotic veins, which only exists consequent on intracranial venous obstruction, and whose size must always be limited by their respective foramina.

But, if mere argumentation be set aside for clinical observation, it will be found, as a matter of fact, that the lingual veins vary in different individuals of the same age in their size and varicosity. Local muscular pressure cannot thus be explanatory; and some other cause must be looked for, and this will usually be found in a morbid state of the heart-wall or valves. The occurrence of hemiplegia in my reported cases is to be accounted for similarly; for the observations of Portal, Copland, Burrows, and others, have shown this to result frequently from any cardiac cause favouring venous congestion. Varicose linguals and vascular changes in the encephalon are thus associated by their common cardiac cause. I have had, as yet, no opportunity of noting the important evidence which morbid anatomy could produce on this subject.

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