

diseases or rheumatism in children, as well as that which appears in pregnancy; and the indications for treatment in chorea deserve more mention than they receive; while under epilepsy we fail to perceive a recognition of the value of ergot so well supported by Seguin. We mention these minor points not because we consider them vital, but because we like the book so well that we would have liked to have had it better. The second part of the work, on Public and Private Hygiene, and on Food in Health and Ill-Health, deserves to be thoroughly impressed upon the mind of both physician and patient, but particularly the former. Few practitioners will read it without acquiring some hints of value to them in their daily work.

F. W.

ART. XLV.—*Visual Power and Colour Perception in Railroad Employés. Third Annual Report of the State Board of Health of Connecticut for the year ending Nov. 30, 1880.* Hartford, 1881.

As is well known, the Legislature of Connecticut at its last session passed a law requiring all railroad employés employed in running the trains to be examined in relation to their acuteness of vision and colour perception. The execution of this law was intrusted to the State Board of Health, and the present report contains the results of its operation—the first experience of the kind in this country.

Two standards of requirements were adopted: one for the first class—composed of engineers, firemen, and brakemen; and one for the second class—including all other employés. For the first, healthy eyes with normal acuteness of vision ($\frac{20}{xx}$) and entire freedom from colour-blindness were required; for the second, visual acuteness of at least $\frac{3}{8}$ in one eye and of $\frac{1}{2}$ in the other, and freedom from colour-blindness in one eye and colour perception of at least $\frac{3}{4}$ in the other eye. Holmgren's worsted tests for colour-blindness were used, and Donders' quantitative tests with reflected spots and transmitted light.

The violent opposition with which the attempted execution of the law met from the railroad men and their friends, and the hue and cry that was at once raised by the politicians and the newspapers, are familiar matters of history. They demanded an entire change in the methods of examination, and clamoured particularly for practical tests by flags and lanterns. In obedience to this popular "pressure," the following modifications in the rules were made: brakemen were transferred to the second class; the standard of visual acuteness was reduced to $\frac{2}{3}$; and those failing in colour perception by the worsted test were allowed to be further tested by flags and lanterns at a distance of 80 rods.

1950 men were examined, of whom 68 were found colour-blind, and 196 with defective vision. 29 were absolutely refused certificates, 9 left voluntarily, some special certificates were granted at the option of the board, and in a number of cases the occupations of the men were changed. Brakemen found deficient were transferred from the front to the middle of the train, where hearing is more important to them than sight. Some interesting practical points were developed by the examinations. Of 43 men who failed by Holmgren's test, and were re-examined, 40 failed also by the flags and lanterns, and only three guessed correctly; and complaints and appeals against the flag and lantern test have been as numerous and

as bitter as against the "fanciful and theoretic tests" of the scientific examinations.

As a plain matter of fact it will not be possible to devise a test which will meet with the approval of those who fail to pass it, and the Connecticut Railroad commissioners, who are entirely correct on this question, truly say, that "had the result proved that there was no necessity for the law, no complaint would have been heard, for universally the men who have passed the examinations say that no man who cannot pass them is fit to run a train." Even if the flag and lantern test were practicable, without great loss of time, where a large number of men are to be examined, it has been shown to be entirely unreliable, particularly when applied by unprofessional persons. Dr. Carmalt gives a striking illustration of this fact; when he showed his orders to the President of the New Haven and Northampton Railroad, which runs into Massachusetts, he was crustily informed that the law was a nonsensical one, that the Massachusetts commissioners had attended to the matter, the employés had been examined under their instructions (by the assistant superintendent), and there was not a colour-blind man on the road. Dr. Carmalt, however, found a much larger percentage of colour-blind on that road than on any other—7 per cent., or nearly double the average. Dr. Carmalt states that, in all his examinations, he found only one man colour-blind of the first class (engineers and firemen), over thirty-two years of age, the average being thirty-one, while the average age of their class is thirty-six, and that "these men are actually eliminated from the service before they reach the average age of their class by a further experimentation with the lives of the passengers and the property of the company."

So little attention has hitherto been given to the subject, that it is not easy to point out instances in which accidents have certainly resulted from colour-blindness, but a striking case has recently been brought to light. A collision occurred, several years ago, between the tug-boat *Lumberman* and the steamer *Isaac Bell*, near Norfolk, in which ten lives were lost. The coroner's inquest developed no definite result; but it was supposed that one of the pilots was drunk. The pilot of the *Lumberman* was recently examined by a marine hospital surgeon and found to be colour-blind, and it is reported that the other pilot has the same defect. In the investigation of the famous Norwalk draw-bridge accident, it was shown that the red signal was properly displayed, but disregarded.

To the unprejudiced and unpolitical observer it would seem that the *raison d'être* of this Connecticut law had been more than established by its brief history. Unfortunately, some of the statesmen at Hartford appear to take a different view of the question, and are bringing all their energy and eloquence to bear for its repeal. Both sides have recently been heard before a Railroad Committee of the House, who have reported the following bill: "The railroad superintendent, the superintendent of motive power, and a surgeon approved by the Railroad Commissioners, shall be a board to examine railroad employés." But it is feared that even this is likely to be defeated in the Senate.

Dr. Jeffries is now perseveringly "agitating" the Massachusetts Assembly with a view to obtain legislative action in reference to examinations for colour-blindness among railroad employés and navigators.

G. C. H.