

What is that? There are differing schools or codes of ethics both in theory and practice, and the only sense that the term 'practical' can be used in relation to ethics is that it may designate the kind of ethics in practice in the time and place in question. This in our country and time, and special field involved, is the ruling order of political economy. This is the practised one as opposed to the professed one, which is Christian, and most decidedly different from the former.

He defends this questionable position with equally questionable figures. There are no 'official' figures compiled by any such men as our practical politicians (especially in matters where they may be assumed to be interested) which any scientific man would accept as evidence to controvert the constancy of the order of nature. The assumption that contractors would hire convicts in trades which are plentifully manned by free laborers, except for the one reason, greater cheapness, involves just such an infraction in the order of nature as is expressed in the commonplace reference to water running up hill.

But even so, says Mr. Butler, the total proportion of convict labor to free is only 1.1 per cent. "And it is this minute percentage of competition that has caused all the hue and cry against convict labor."

This is a peculiarly misleading way of 'treating' the figures. The pressure of convict competition has been felt in certain trades of certain localities, such as shoe and hat making of the state of New York. There the percentage has been large enough to injure both employers and employed, and, if Mr. Butler wishes to show the causelessness of the 'hue and cry,' he ought to show the percentage in special trades and localities. A shoemaker does not compete with a tinsmith, nor does the purely local trade of one locality interfere with that of another.

It is true, however, that even the unaffected trades have taken up the 'hue and cry,' and that is because their ethics differ from the 'ruling school,' where the principle, 'every one for himself,' is held, and instead of that their ethical doctrine is, 'an injury to one is the concern of all.'

E. LANGERFELD.

Amongst a number of inferences, the above communication contains one statement, and that not bearing on the question of the general merits of the contract system, but on its application to the hat and shoe trades in the state of New York. Whether any modification of the system in this point of its application is advisable, experience must determine; perhaps a restriction as to the number of convicts to be employed in any one industry would be desirable.

The official figures as far as these two industries are concerned are as follows. In 1879, 320 convicts were employed in making hats in the state of New York, while 5,267 free workmen were engaged in the same industry; thus the competitive force of the convict labor was about 4 per cent. In 1879, 1,927 convicts — 1,885 males and 42 females — were employed in New York prisons (at Sing Sing, Auburn, and Clinton prisons, at the penitentiaries at Albany, Brooklyn, Rochester, and Blackwell's Island, and at the western house of refuge at Rochester) in the manufacture of boots and shoes. According to the census of 1880, 26,261 is the number of free laborers at boot and shoe making in New York state. This shows the competitive force of the convicts' labor in this instance to be something over 4 per cent. This amount is still small, though considerably greater

than the figure (1.1) which we found to represent the competitive force of all the convict labor in the United States, without regard to particular industries.

Your correspondent has selected that example in which competition is greatest, but even then 4 per cent is the highest figure reached, and surely it is not so very formidable. I have had some hesitation in adducing fresh figures, for fear that they may be summarily rejected as useless, because they do not fit in with some person's ideas as to how the 'course of nature' ought to go.

NICHOLAS MURRAY BUTLER.

The festoon cloud.

I have been much interested in the recent articles in *Science* on festoon clouds. In August, 1884, I witnessed a remarkable exhibition of this description over Vineyard Sound, between the shoulder of Cape Cod and Martha's Vineyard. It was in the morning, about nine or ten o'clock. The sky was overcast with clouds betokening a shower. A thunder-cloud was in the north-west, from which occasional mutterings were heard. High over the water was a dark cloud, from which depended portions of the cloud like great curtains. These depending portions grew lighter in color, and thinner in texture, until, when within about one hundred feet from the water, they frayed out into a fringe-like appearance. Between these curtains the atmosphere was comparatively clear, up to the dark cloud above; but, as the depending portions approached the dark cloud, they grew in dimension and density, forming arches from one to the other. The dark cloud extended south-west and north-east in the direction of the axis of Vineyard Sound, but the depending clouds were at right angles to this direction. I secured a sailboat, and sailed underneath these clouds, and the display was truly wonderful. The fringing of the lower portion of the depending clouds was very beautiful, and the high arches between were impressive. This exhibition was followed by a severe thunder-storm, as I remember. There seemed to be currents of air of different temperatures, but, in the absence of instruments, I was unable to make any record of this. I recall that the wind was unsteady and shifting at the surface, which required careful management of the boat.

J. M. ALLEN.

Hartford, Conn., Feb. 6.

Correction of thermometers for pressure.

Imperfect instruments, faulty methods, and personal errors have caused the introduction of a great many inaccuracies in scientific literature, and entailed great labor in their correction and the repetition of experiments. This is especially true in the case of physical constants. It is manifest that in this work of redetermination the most painstaking accuracy should be aimed at, and every possible source of error avoided. Otherwise the work must be repeated at some future day, and our theories based upon uncertain constants will have but little force.

It occurred to one of us (Dr. Venable) that a source of error in thermometric readings, not generally corrected for, might lie in the effect of pressure upon the glass bulb containing the mercury. No reference to any such corrections could be found in the books at our command, and we resorted to experiment to test the amount of the possible error.

A few experiments, carried out with some fine