ties, purely statistical, which must be surmounted before the tables are completed. Colonel Wright drew from his own experience excellent illustrations of these. "The question may be asked," he said, "what elements of capital are involved in the census question of 'capital invested'? Is it simply the cash capital invested by the concern under consideration, or is it all the money which is used to produce a given quantity of goods? If the members of a firm contribute the sum of $10,000, and they have a line of discounts of $100,000, the avails of which are used in producing $200,000 worth of completed goods, what is the capital invested? What is the capital invested which should be returned in the census? If a man has $5,000 invested in his business as a manufacturer, and he buys his goods on ninety days, or four months, and sells for cash, or thirty days, what is his capital invested? This question is one among many of the practical problems that arise in a statistical bureau, but which has not yet been treated scientifically. What has been the result of the reported statistics relating to capital invested? Simply that calculations, deductions, and arguments based on such statistics have been and are vicious, and will be until all the elements involved in the term are scientifically classified. Another illustration in point arises in connection with the presentation of divorce statistics, especially when it is desired to compare such statistics with marriages, or to make comparisons to show the progress, or the movement of divorces. Shall the number of divorces be compared with the number of marriages celebrated in the year in which the divorces are granted, or with the population, or with the number of married couples living at the time? I need not multiply illustrations. The lies of statistics are unscientific lies." In speaking of the U. S. census, Colonel Wright said, that although we take a census in the United States every ten years, yet, as a rule, the men that are brought into the work know nothing of statistics. They should be trained in the very elementary work of census-taking and of statistical science. It would be much more economical for the government to keep its experienced statisticians busily employed in the interim of census-taking, even if they do no more than study forms, methods, and analyses connected with the presentation of the facts of the preceding census. Money would be saved, results would be more thoroughly appreciated, and problems would be solved. The next congress must make the preliminary arrangements for the eleventh census, and it would be a national gain were Colonel Wright himself put in charge of the work.

PHYSICAL CULTURE FOR CRIMINALS.

IN *Science* for May 13 appeared a favorable notice of an experimental class in physical culture, conducted during the summer of 1886 at the New York state reformatory, and described at length in the last annual report of the board of managers. The class consisted of twelve men, dull and stupid, but not idiots or imbeciles, who seemed incapable of any prolonged mental effort, and who had failed to make any appreciable progress in school-work. The object in view in the formation of the class was to determine if physical culture, with all that the term implies, would not result in at least a partial awakening of dormant mental power in twelve men mentally and morally obtuse.

With physical culture and improvement, there came a mental awakening; and at the end of five months, when the class was discontinued, the men were able to perform operations in simple arithmetic, as division and cancellation, — a thing they had never done before, as the average criminal is remarkably dull in all that pertains to mathematics.

It is now more than six months since the class was given up, and the men assigned to various shops and employments and the primary classes of the reformatory, — a period sufficiently long to determine, in part at least, the value of physical culture as an educational factor.

One man, a southern negro, died during the winter from pulmonary disease, leaving eleven men under observation at the present time. At the time the class was formed nine of these eleven men were in the third grade, and two in the second or intermediate. Five months later, or when the class was discontinued, these nine men had attained the second grade, and the two there originally had maintained their standing. At the present time of writing, six have reached the first grade, leaving five in the second; and of these latter, two have every prospect of reaching the first by the beginning of May.

The average marking of these eleven men for the six months preceding their course of training, and while engaged in shop-work, was as follows: demeanor,— $2\frac{1}{2}$; labor, $2\frac{10}{33}$; school, $1\frac{3}{22}$, or 46 per cent; 3 representing the highest attainable mark in each, or an aggregate of 9 for the time named. During the continuance of the class, and in response to the efforts made to arouse these men

from their state of mental lethargy, their marking in school rose to 74 per cent, and their demeanor proportionately improved. From November, 1886, to April, 1887, inclusive, the men being employed as laborers and at various industries, as brush-drawing, their average marking was as follows: demeanor, $2\frac{1}{5}$; labor, $2\frac{9}{11}$; school, $2\frac{9}{30}$, or 71 per cent, — a great improvement as compared with their record from December, 1885, to May, 1886, inclusive, as given above. The record of these eleven men for corresponding periods before and after their course of physical training presents a marked contrast.

If the improvement noted in these dullards during the time they were receiving their athletic training was the result of better spirits, arising from the novelty of their position, and pride that they were singled out from their fellows for certain work, and removed in a measure from prison monotony, it would be reasonable to expect that with the removal of the stimulus, and the return of all to the routine prison-life, with the consequent loss of the individuality they might have enjoyed, there would come sooner or later a falling-back and lapsing into their previous state of mental inertia. But, returned to the *régime* and discipline observed with other prisoners, they maintained their good record; and, six months after the termination of the experiment, the mental power revealed by their physical-culture course has continued to develop, and the former shuffling gait and stooping shoulders which characterized them as a class have been replaced by an alertness and promptitude of action.

I do not think the improved mental condition of these men can be attributed to other than the strengthening of the brain-centres by the cultivation and development of muscle and muscles under the control of these same nervous centres, the one participating and taking part in the improvement of the other. From the words of commendation I have received, and noting the progress of the men under conditions that once seemed to promise so little to them by reason of their stupidity and obtuseness, I regard my class in physical culture as more than an experiment, — a success, — as showing that something more than mere brawn can be accomplished by muscular exercise when properly selected, guided, and governed. H. D. WEY, M.D.

DISTILLERY-MILK REPORT.[1] — *II.*

IN response to the question, What is your opinion as to the wholesomeness of distillery swill as food for cows? the following were received: —

[1] Continued from p. 553.

[D. W. HAND, M.D.]

I do not believe it to be a wholesome food.

[L. MCLEAN, M.R.C.V.S.]

Detrimental to the general health of any ruminating animal. As such food does not require to be masticated, or remasticated, hence a perverted condition of the ruminating apparatus.

[EDWARD PLAYTER, M.D., editor of the Canadian *Health journal.*]

I have observed a number of items in medical journals (of which I, as editor for twelve years of the Canadian *Health journal*, have received many), referring to the injurious effects of the swill upon the milk of milch-cows fed with it, but I cannot call to mind any facts. Knowing well the effects of dirt upon the organs and secretions of both man and animals, I am convinced that distillery swill, which must constitute a very imperfect food, would furnish but a very inferior milk, and that cows fed chiefly or largely upon such swill give a milk of inferior quality, and not fit for habitual use, especially as food for infants. Animal chemistry and physiology would seem to render this impossible.

[CHARLES SCHAEFFER, M.D., Philadelphia, Penn.]

Upon general principles, I judge that food which breaks down the cow's constitution, very much as chronic alcoholism (which does not result in fatty degeneration) destroys the human constitution, producing diarrhoea and muscular atrophy, is not likely to give a very healthy secretion of milk, but, on the contrary, a poisonous one.

[OSCAR C. DEWOLF, M.D., Chicago, Ill.]

I have been commissioner of health of the city of Chicago for eleven years past, and during that period, until 1885, several hundred milch-cows were constantly fed in distillery sheds in this city. I believe that distillery slop before it has passed into the acetic acid fermentation, and fed in proper quantities to cows running at large, is perfectly wholesome food. I object to so-called 'distillery milk,' because of the close and long confinement of cows, and the dirty methods of gathering and storing the milk. It is probable, also, that cows thus confined do not often receive the quantity of hay they require for vigorous health. These conditions must affect the milk, whether chemists can detect the change or not. Not a cow giving milk for public supply is now fed and confined in a distillery shed in this city, and for reasons above given I shall oppose any attempt to do so.

[WILLIAM OLDWRIGHT, M.D.]

I consider distillery swill an unwholesome food for cows.