their own work in the states, is to purchase the memoirs out of their abundant professorial incomes. What that means when it comes to the illustrated memoirs and atlases, most needed by the actual worker, is too obvious to need discussion. They will simply have to be done without by those not within reach of a large public library.

Heretofore, a certain number of copies of such publications, outside of those placed at the disposal of congressmen, were distributed gratuitously to those known to be actively interested in the subject, by the authors, or heads of surveys, who knew exactly whom to reach among their scientific co-workers; and the stimulus thus given to research and scientific intercourse was very great. All this is now effectually embargoed: the very men whom these documents should reach are cut off from them by this penny-wise and pound-foolish legislation.

If it be true that the United States cannot afford to continue the expenditure involved in the gratuitous distribution of such costly publications, even for the encouragement of scientific research, it would be far better that their cost should be reduced from the magnificent quartos and royal folio atlases to such material and dimensions as *can* be afforded consistently with a judicious gratuitous distribution, intrusted, for example, to the judgment and discretion of the director, the Smithsonian institution, and the National academy, severally or jointly. The scientific publications would then be quite sure not to be wasted, and yet would with equal certainty reach those whose active interest in the progress of science should entitle them to their possession. This is the more needful, since the extension of the national survey into the states will, for the time being, undoubtedly render state surveys less numerous, and more scantily endowed for scientific work; so that the publications of the national survey will be the chief source of information hereafter. It does seem that what the states could afford to do gratuitously for their own citizens could be afforded by the national government, now that this kind of work has practically passed into its hands.

E. W. HILGARD.

Berkeley, Cal., April 19, 1883.

THE AGRICULTURAL EXPERIMENT-STATION OF CONNECTICUT.

Annual report of the Connecticut agricultural experiment-station for 1882. New Haven, *State*, 1883. 114 p. 8°.

THE major portion of this report is, as usual, occupied with analyses and valuations of commercial fertilizers, and divers other fertilizing materials, and though valuable in its way, and in accordance with the design of the station, contains little of general scientific interest. The review of the fertilizer-market for the past year, on pp. 56–60, must prove of considerable aid in the valuation of fertilizers, and will doubtless attract the attention of both manufacturers and consumers.

Among the fodder analyses are two of duplicate samples of field-corn and of fodder-corn, selected with especial care, and also of ensilage from the same material. These analyses disclosed the interesting fact, that the duplicate samples of the same material differed more in some cases than did the ensilage and the fresh substance. These results illustrate the great difficulties that stand in the way of preparing a fair sample of such a bulky plant as maize, and throw considerable doubt on the accuracy of some of the recently published results regarding the changes which maize undergoes in the silo.

The most generally interesting portion of the report is the paper on 'Milk,' by Dr. E. H. Jenkins, which includes the results of several analyses of the milk of single Guernsey cows, and of over two hundred partial analyses of the mixed milk of herds. These results afford valuable data in regard to the variations which may occur in commercial milk, and the possibility of establishing by law a standard of purity for milk. In regard to the variations in the milk-solids, "an inspection of all the results . . . leads to the conclusion, that, in pure herd-milk, the solids may in some cases, and at certain seasons, sink as low as 10 or 10.5 per cent, and the fat to 2.6 per cent; and that very frequently (in 28 per cent of the samples examined at this station) the solids are less than 12 per cent."

In one case the total solids amounted to only 9.79 per cent, though it was not *certain* that the milk was unadulterated, and, in six cases out of two hundred and seven, to less than 10.5 per cent. Dr. Jenkins comes to the following conclusions regarding the standard of purity for milk: —

"As evidence of watering, simply, specific gravity furnishes by far the most satisfactory test; and, if 1.029 is adopted as a minimum, no pure milk will be condemned. In some cases moderately watered milk may escape detection.

"If we will establish a minimum limit for the percentage of solids and fat which shall in no case condemn pure milk in any locality, we shall have to make it absurdly low, and thus offer a premium on watering milk of good quality."

While evidently doubting the practicability of establishing a general standard of purity for milk, Dr. Jenkins thinks it possible to establish by mutual consent *local* standards for limited districts, where the pasturage and other conditions are tolerably uniform. Where this is done he would not have the question of the *purity* of the milk raised at all, but would simply condemn all which falls below the standard as too poor to use. Both suggestions seem worthy of general consideration.