

## THE UNIVERSITY AND BEET SUGAR.

Nearly every Nebraskan has heard more or less of the attempt to make the production of beet-sugar a Nebraska industry, but few are aware of the prominent part taken in the investigations by the University. The interest of the chemical department in the matter began some years ago when Professor Nicholson was in Germany. He noted the similarity of soil between that of northern Germany, given up to beet culture, and that of western Nebraska. He thought that beet culture might be made profitable in this state. Some experiments had been made by Germans at Grand Island. Within a year the Wellfleet company of English capitalists have started works in Lincoln county. Now capital wishes to know how much sugar the Nebraska beet will yield, and where beets can be profitably raised. These questions the chemical department of the University has undertaken to answer. The department of agriculture distributed seeds to all who would plant and report results. Last spring the University sent circulars to the farmers of the state requesting that sample beets be sent in for analysis. During the summer Professor Nicholson and Mr. Herbert Marsland made a trip to the western part of the state collecting soils for analysis. Much literature on the subject of beet-sugar was also collected.

Beets began to arrive at the University in July and are still coming from all parts of the state. Thirty counties are already represented. Mr. Herbert Marsland in connection with Professor Rachel Lloyd has had charge of the analysis, which began in August. First, beets grown on the college farm were analyzed repeatedly, at intervals of a week, to determine the time when the beets contained most sugar. Mr. Marsland made a small quantity of beet-sugar which was exhibited at the state fair and since then at St. Louis, New York, and Philadelphia. Both Mr. Marsland and Professor Lloyd have worked faithfully for the last four months and have each now analyzed about eighty specimens.

The process of determining the per cent of sugar may be interesting to the uninitiated. The beets are first washed, then weighed. Then the rough exterior is scraped off and the beet is again weighed. A wedge-shaped piece is cut out of the center, containing proportionately the same amount of exterior and interior as the beet itself. 200 grammes of this wedge are taken and grated to a pulp, which is pressed until it yields up all its juice. After the specific gravity of the expressed juice is determined, 50 c. c. are treated with sub-acetate of lead which purifies it by coagulating the protoplasmic matter. The solution, doubled in volume by the addition of water, is then carefully filtered and placed in the tube of the polariscope. The per cent of sucrose, or real sugar, is shown by the refraction of a ray of light. The per cent of glucose is estimated by treating with a solution of copper (Fehling's solution.)

The results so far obtained are encouraging. The per cent of sugar varies from 4 to 22. It is profitable in Germany to produce sugar from beets containing only 9 per cent. The seed sent out was poor, and the varieties were badly mixed. The beets sent in were frequently the largest obtainable and these show a smaller per cent of sugar than smaller beets. Then, too, the plant is not yet acclimated. Under more favorable conditions better results may be looked for. The analyses have not yet been tabulated so as to show the most favorable localities, but indications point to the region extending southwest from Grand Island, embracing the sandy land adjacent to the Platte, as the future home of the sugar-beet.

The result of the investigations will be published in a bul-

letin early in 1890, and will thus reach all persons interested. We might remark in passing that all this investigation is made by the University without any extra expense or appropriation.

Mr. Marsland's connection with the beets does not end with the operations detailed above. He has undertaken for his thesis-work the determination of the relation between the other mineral matter in the beet and the sugar, and their dependence on the quality of the soil. The beets are weighed first fresh, then dried and then burnt to an ash; and the relation between the different weights determined. The ash is then analyzed both qualitatively and quantitatively, and taken in connection with the nature of the soil the beet grew in, the results from the different beets are compared. So far as the chemical department has been able to discover, this analysis has been undertaken for the first time in this country by Mr. Marsland. The soil-analysis which furnishes part of the basis for Mr. Marsland's conclusions is performed by Mr. Fulmer and Mr. Duncanson, and furnishes further material for thesis work,

## LITERARY.

R. D. Blackmore, the author of "Lorna Doone," has recently expressed it as his opinion that "Lorna Doone" is not a very good book after all. He characterizes it as childish, and as lacking bottom. Perhaps it does not make any difference. The reading public likes to decide such questions for itself. It shows, however, on the part of Mr. Blackmore, a willingness to acknowledge a weakness, whether he does so for advertising effect or not.

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And now comes the second installment of the debate on the subject of "Divorce," begun in the November number of the *North American Review*. In the December number, Mr. Gladstone presents his view of the case, after the Romish, the Episcopal an, and the Ingersolistic sides have been discussed. Whether one agrees with the great statesman in his opinions of one of the most crying evils of the age, all cannot fail to be interested in what he says, since it is certain that he makes a strong argument.

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The *Literary World's* last issue is a holiday number. Whether the holiday season is a time peculiarly adapted to current literature, or not, may be a question. But there is no doubt that the list of new books and old books in new forms is formidable. One almost thinks there is no use trying to keep within so much as hearing distance of the great procession. There is one consolation, however. Much that is written is bad; it is not worth reading. So one ought not to have anything to do with it. This leaves him more time for the good. Even then an optimist may feel satisfied, for the truly worthy portion of current literature is far more than any one man can handle.

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The *Nation* contains a somewhat lengthy discussion of the topic "The University and the Professions." It is undoubtedly a fact that while the number of students in educational institutions is on the increase, yet that increase is not proportionate with the increase in population. The great hurry of every young man and woman to begin life, the overcrowded condition of both professions and trades, keeps many from attaining a college education. For by going to school a man is compelled to start in business two or three years behind his less cultured brother. This, in a time when the earliest