VALUE OF LOCALLY GROWN HEMP FOR ALPHA-CELLULOSE PRODUCTION

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Last summer Dr. Leo M. Christensen of Iowa State College and The Chemical Foundation stated that considerable laboratory work was needed on the preparation of alpha-cellulose from the hurds or woody portion of the hemp stalk. After three or four months work experimenting and gaining information, it became quite clear that this work had in reality reached a commercial basis, since plants were actually working or were contemplated in the near future at several places in the United States. It was an attempt to salvage something of value to South Dakota that the work here reported was done.

Wild hemp had been harvested from the roadsides west of Yankton, and the hurds separated from it, and samples of separated hurds obtained from Dr. J. M. Johnson, of Hartington, Nebraska, from hemp grown near there, from the Illinois Fiber Corporation of Ottawa, Illinois, and from the Northwestern Fibre Company, of Mankato, Minnesota. These were analyzed according to the method recommended by the Committee of the American Chemical Society[1]. The method is empirical and consists in dissolving, under arbitrary conditions of time and temperature, the non-cellulose constituents with 17.5 per cent sodium hydroxide, washing the residue with water and acetic acid, and drying to constant weight. Three samples from each source were analyzed. The results are shown in the table.

Source	alpha-cellulose mean, per cent	variation from the mean, per cent
Wild hemp	87.4	2.1
Nebraska hemp	63.2	1.1
Illinois hemp	83.3	0.2
Minnesota hemp	88.5	0.4

The larger variation from the mean in the results from the first two sources is probably due to the irregular size

[1] Eng. Chem. An. Ed. 1, 52 (1929).

of the hurds, which were prepared by hand. The low cellulose content of the Nebraska hemp is possibly due to the fact that it was grown very thickly with the idea of fiber rather than cellulose production. It may, of course, be due to difference in soil, since the Illinois and Minnesota soils may have been richer. The wild hemp was taken from roadside soil which was very rich, and the size of the stems of the hurds from Illinois and Minnesota would indicate that they had been grown under similar conditions. It would seem therefore, that hemp must be grown under better conditions than those actually maintained in the Nebraska neighborhood, in order to equal that of Minnesota and Illinois for alpha-cellulose production.