

OHIO AGRICULTURAL EXPERIMENT STATION

BULLETIN 132

WOOSTER, OHIO, JANUARY, 1902

SUGAR BEET INVESTIGATIONS IN 1901.

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BULLETIN

OF THE

Ohio Agricultural Experiment Station

NUMBER 132

JANUARY, 1902

SUGAR BEET INVESTIGATIONS IN 1901

BY JOHN W. AMES

The investigations for the season of 1901 are mainly a continuation of those carried on during the four previous years.

Seed was distributed to 131 applicants, 39 of whom, representing 11 counties, sent beets to the Station for analysis. The beet seed for distribution was supplied by the Department of Agriculture through the Section of Seed and Plant Introduction of the Division of Botany, and consisted of the following five varieties:

No. 5769—French very rich sugar beet, Vilmorin.

No. 5770—German Kleinwanzlebener sugar beet, Strandes.

No. 5771—German Kleinwanzlebener sugar beet, Hoernings.

No. 5772—German Kleinwanzlebener Elite sugar beet, Dippe.

No. 5773—American sugar beet, grown in Utah.

RESULTS OF SUGAR BEET ANALYSIS MADE IN 1901

Of the 216 samples of beets received for analysis 194 came from the northern section of the state and 22 from the middle section.

No samples were received from the southern section. The detailed results are given in Table I, page 56, and summarized for the sections and entire state in Table II, page 64.

The results show a decided improvement in the quality of beets over those of 1900. The per cent. sugar, 12.8, is practically the same as for the years 1897 and 1899; these years being considered favorable for the sugar content of the beet. The purity coefficient is higher than for any previous year. The results of analyses of beets grown throughout the state for the years 1897, 1898, 1899, 1900 and 1901 are compared in Table III, page 66.

VARIETY TESTS AT FREMONT

Variety tests were conducted at Fremont, Sandusky county, through the co-operation of Mr. I. W. Walton, on whose farm the tests were made. Six varieties of seed, five varieties being the same as those distributed by this Station, and one variety, "Original Kleinwanzlebener," obtained from the Continental Sugar Co., were planted by Mr. Walton, May 3. The first growth of beets was destroyed and a second planting was made June 17. Samples were taken for analysis October 5, October 15 and October 29. Beets were in the best condition as to quality at the last sampling, October 29.

The per cent. of sugar in beet, and the purity coefficient of the several varieties analyzed at the last sampling, vary from 11.6 per cent. sugar content and 74.4 purity for No. 5769 to 13.6 per cent. sugar and 82 purity for the Original Kleinwanzlebener variety. The results of analyses are given in Table IV, page 68.

VARIETY TESTS AT NEAPOLIS

Tests were also made at the Northwestern Substation, located in Fulton county near Neapolis, O. The same six varieties of seed tested at Fremont were planted on thin black sand. The plots on which Nos. 5770 and 5771 were planted produced the best stand of beets. The Original Kleinwanzlebener variety leads as to quality of the beet, having 16 per cent. of sugar and a purity coefficient of 88. The results of analysis, given in Table V, page 69, are higher than for the same varieties sampled at Fremont, O.

FERTILIZER EXPERIMENTS AT NEAPOLIS

A series of plots containing 1-20 acre each, on light sandy soil at Neapolis, were treated with fertilizers for the purpose of showing the effect, if any, of phosphoric acid, potash and nitrogen on the quality of beets and yield per acre. Acid phosphate, potassium sulfate, potassium chlorid, nitrate of soda, tankage and barnyard manure were used as carriers of the phosphoric acid, potash and nitrogen. The same variety of seed, Original Kleinwanzlebener, was planted on all the plots.

RESULTS ON YELLOW SAND

The tests included a series of 20 plots, every third plot being left unfertilized. The stand of beets was too uneven to justify any definite comparison as to increased or decreased yield of the fertilized over the unfertilized plots. Table VI, page 70, shows the amounts and combinations of fertilizers applied to the plots and the

results of analyses of beets sampled October 2, 15 and 29. The average per cent. of sugar in beet and purity coefficient for the fertilized plots is 16.3 sugar content and 87.2 purity; for the unfertilized plots, 16.2 per cent. sugar content, purity 87.4.

RESULTS ON BLACK SAND

More satisfactory results were obtained from the fertilizer tests on black sand, the increase of yield of the fertilized plots over the unfertilized being very decided. The test included a series of five plots, the first and fourth being left unfertilized. The results shown in Table VII, page 72, set forth the interesting facts that acid phosphate alone increased the yield 260 pounds to the acre; the combination of phosphoric acid and potash shows better results, by increasing the yield 3,980 pounds per acre; the combination of phosphoric acid, potash and nitrogen shows the best results, giving an increase of 8,070 pounds per acre.

TABLE I: DETAILED RESULTS OF SUGAR BEET

Laboratory No.	Name of grower	Postoffice	County	Character of soil	Variety
3408	J. L. Focht.....	Waynesfield....	Auglaize....	Dark.....	French, very rich (Vilmorin) 5769
3409	".....	".....	".....	Dark sand...	Gr. Kl. W. (Hoerning) 5771
3410	".....	".....	".....	Sandy loam..	Gr. K. W. Elite (Dippe) 5772
3411	".....	".....	".....	Dark sand...	Gr. Kl. Wanz. (Strandes) 5770
	Ave., 4 samples...				
3420	J. E. Davis.....	Mechanicsburg	Champaign	Black loam..	French, very rich (Vilmorin) 5769
3421	".....	".....	".....	".....	Gr. Kl. W. (Hoerning) 5771
3422	".....	".....	".....	".....	Gr. K. W. Elite (Dippe) 5772
3423	".....	".....	".....	".....	Klein Wanz.
3461	J. J. Mumma.....	".....	".....	Clay loam...	Gr. Kl. Wanz. (Strandes) 5770
3462	".....	".....	".....	".....	French, very rich (Vilmorin) 5769
	Ave., 6 samples...				
3451	Jno. A. Hardacre..	Donnelsville....	Clark.....	Clay loam...	Gr. Kl. W. Elite (Dippe) 5772
3452	".....	".....	".....	".....	Gr. Kl. W. (Strandes) 5770
3453	".....	".....	".....	Black soil...	French, very rich (Vilmorin) 5769
3454	".....	".....	".....	White clay...	Gr. Kl. W. (Hoerning) 5771
3463	O. M. Trumbo.....	".....	".....	Black soil...	French, very rich (Vilmorin) 5769
3464	".....	".....	".....	".....	Gr. Kl. Wanz. (Dippe) 5772
3465	".....	".....	".....	".....	Gr. Kl. Wanz. (Hoerning) 5771
3466	".....	".....	".....	".....	Gr. Kl. Wanz. (Strandes) 5770
	Ave., 8 samples...				
3443	Jno. F. Blume.....	New Washington	Crawford...	Blue clay....	Klein Wanzlebener
3444	".....	".....	".....	".....	".....
	Ave., 2 samples...				
3407	J. F. Bolo.....	Georgesville....	Franklin....	Mixed clay..	Klein Wanzlebener
3458	K. K. Watkins....	Delta.....	Fulton.....	Yellow sand..	".....
3250	Lewis Schultz....	Swanton.....	".....	Black sand...	French, very rich (Vilmorin) 5769
3251	".....	".....	".....	".....	Gr. Kl. W. (Strandes) 5770
3252	".....	".....	".....	".....	Gr. Kl. W. (Hoerning) 5771
3253	".....	".....	".....	".....	Gr. Kl. W. Elite (Dippe) 5772
3254	".....	".....	".....	".....	Utah, 5773
3255	".....	".....	".....	".....	Original Klein Wanz.
3256	".....	".....	".....	".....	French, very rich (Vilmorin) 5769
3257	".....	".....	".....	".....	Gr. Kl. W. (Strandes) 5770
3258	".....	".....	".....	".....	Gr. Kl. W. (Hoerning) 5771
3259	".....	".....	".....	".....	Gr. Kl. W. Elite (Dippe) 5772
3260	".....	".....	".....	".....	Utah, 5773
3261	".....	".....	".....	".....	Original Klein Wanz.
3322	".....	".....	".....	".....	French, very rich (Vilmorin) 5769
3304	".....	".....	".....	".....	Gr. Kl. W. (Strandes) 5770
3324	".....	".....	".....	".....	Gr. Kl. W. (Hoerning) 5771
3309	".....	".....	".....	".....	Gr. Kl. W. Elite (Dippe) 5772
3311	".....	".....	".....	".....	Utah, 5773
3330	".....	".....	".....	".....	Original Klein Wanz.
3374	".....	".....	".....	".....	French, very rich (Vilmorin) 5769
3371	".....	".....	".....	".....	Gr. Kl. W. (Strandes) 5770
3380	".....	".....	".....	".....	Gr. Kl. W. (Hoerning) 5771
3379	".....	".....	".....	".....	Gr. Kl. W. Elite (Dippe) 5772
3359	".....	".....	".....	".....	Utah, 5773
3368	".....	".....	".....	".....	Original Klein Wanz.
3262	".....	".....	".....	".....	".....
3263	".....	".....	".....	".....	".....
3264	".....	".....	".....	".....	".....
3265	".....	".....	".....	".....	".....
3266	".....	".....	".....	".....	".....
3286	".....	".....	".....	Yellow sand..	".....
3283	".....	".....	".....	".....	".....
3281	".....	".....	".....	".....	".....
3275	".....	".....	".....	".....	".....
3268	".....	".....	".....	".....	".....
3285	".....	".....	".....	".....	".....
3272	".....	".....	".....	".....	".....
3282	".....	".....	".....	".....	".....
3277	".....	".....	".....	".....	".....
3284	".....	".....	".....	".....	".....
3280	".....	".....	".....	".....	".....
3271	".....	".....	".....	".....	".....
3270	".....	".....	".....	".....	".....
3267	".....	".....	".....	".....	".....

INVESTIGATIONS IN OHIO FOR 1901.

Date of planting	Width between rows— inches	Date of sampling	Date of analysis	Average weight of beets— ozs.	Sucrose in beets— per cent	Purity coefficient	Laboratory No.
April 8	20	Nov. 4	Nov. 6	15.1	12.9	82.4	3408
" 8	20	" 4	" 6	15.2	9.8	77.6	3409
" 8	20	" 4	" 6	14.8	11.5	79.6	3410
" 8	20	" 4	" 6	14.5	11.9	81.8	3411
				14.9	11.5	80.4	
April 20	22	Nov. 4	Nov. 11	11.3	8.5	71.6	3420
" 20	22	" 4	" 11	7.1	8.2	73.3	3421
" 20	22	" 4	" 11	7.7	8.3	73.8	3422
" 20	22	" 4	" 11	6.5	8.8	73.8	3423
May 7	.....	" 7	" 14	3.6	7.4	64.	3461
" 7	.....	" 7	" 14	15.4	8.8	71.1	3462
				8.6	8.3	71.3	
April 12	20	Nov. 7	Nov. 12	10.1	12.8	77.8	3451
" 12	20	" 7	" 12	6.8	14.1	86.	3452
" 12	20	" 7	" 12	7.	12.4	80.7	3453
" 12	20	" 7	" 12	7.8	15.6	84.1	3454
" 14	20	" 11	" 14	9.7	12.1	81.5	3463
" 14	20	" 11	" 14	7.	11.6	81.9	3464
" 14	20	" 11	" 14	9.2	11.	77.9	3465
" 14	20	" 11	" 14	8.4	10.5	79.1	3466
				8.2	12.5	81.1	
May 15	38	Nov. 8	Nov. 9	30.6	9.4	77.5	3443
" 15	38	" 5	" 9	37.8	11.8	76.3	3444
				34.2	10.6	76.9	
April 18	18	Oct. 29	Nov. 6	5.6	13.3	78.7	3407
May 10	24	Nov. 9	Nov. 14	8.1	11.5	77.3	3458
" 2	21	Sept. 24	Sept. 26	8.6	12.8	88.2	3250
" 2	21	" 24	" 26	7.2	13.9	88.	3251
" 2	21	" 24	" 26	7.1	13.3	87.5	3252
" 2	21	" 24	" 26	5.5	14.1	86.5	3253
" 2	21	" 24	" 26	6.	13.7	87.8	3254
" 2	21	" 24	" 26	8.6	14.5	86.4	3255
" 2	21	Oct. 2	Oct. 7	10.9	14.4	88.9	3256
" 2	21	" 2	" 7	12.	13.9	88.5	3257
" 2	21	" 2	" 7	10.5	14.8	86.6	3258
" 2	21	" 2	" 7	9.8	14.6	88.5	3259
" 2	21	" 2	" 7	9.3	14.3	88.3	3260
" 2	21	" 2	" 7	8.9	15.7	88.7	3261
" 2	21	" 15	" 19	15.4	14.5	88.3	3322
" 2	21	" 15	" 19	13.9	14.9	88.6	3304
" 2	21	" 15	" 19	16.9	15.9	88.8	3324
" 2	21	" 15	" 19	17.8	14.7	86.4	3309
" 2	21	" 15	" 19	12.6	14.7	86.4	3311
" 2	21	" 15	" 21	12.7	17.1	89.5	3330
" 2	21	" 15	Nov. 4	9.1	15.8	85.9	3374
" 2	21	" 29	" 4	12.1	16.4	88.1	3371
" 2	21	" 29	" 4	12.	16.4	88.5	3380
" 2	21	" 29	" 4	14.7	14.6	83.6	3379
" 2	21	" 29	" 4	9.3	16.1	84.4	3359
" 2	21	" 29	" 2	9.4	16.9	87.6	3368
" 6	21	" 2	Oct. 7	11.6	13.5	88.2	3262
" 6	21	" 2	" 7	7.8	15.4	88.5	3263
" 6	21	" 2	" 7	9.8	11.7	89.7	3264
" 6	21	" 2	" 7	7.7	14.2	87.6	3265
" 6	21	" 2	" 7	12.6	15.	89.8	3266
" 1	21	" 2	" 7	20.7	16.6	87.9	3286
" 1	21	" 2	" 7	14.1	16.6	88.	3283
" 1	21	" 2	" 7	17.8	14.4	86.4	3281
" 1	21	" 2	" 7	10.5	16.1	88.9	3275
" 1	21	" 2	" 7	12.5	15.6	90.1	3268
" 1	21	" 2	" 7	11.7	15.7	88.6	3285
" 1	21	" 2	" 7	10.6	14.7	86.5	3272
" 1	21	" 2	" 7	10.7	15.3	87.	3282
" 1	21	" 2	" 7	18.	15.4	87.6	3277
" 1	21	" 2	" 7	9.	16.1	89.4	3284
" 6	21	" 2	" 7	8.6	15.9	89.7	3280
" 6	21	" 2	" 7	11.7	16.	87.4	3271
" 6	21	" 2	" 7	5.7	16.4	89.6	3270
" 6	21	" 2	" 7	13.1	15.5	89.	3267

TABLE I: DETAILED RESULTS OF SUGAR BEET

Laboratory No.	Name of grower	Postoffice	County	Character of soil	Variety
3278	Lewis Schultz.....	Swanton.....	Fulton...	Yellow sand.	Original Klein Wanz
3274	"	"	"	"	"
3279	"	"	"	"	"
3276	"	"	"	"	"
3269	"	"	"	"	"
3273	"	"	"	"	"
3328	"	"	"	Black.....	"
3320	"	"	"	"	"
3313	"	"	"	"	"
3319	"	"	"	"	"
3326	"	"	"	Black sand..	"
3321	"	"	"	Yellow sand.	"
3316	"	"	"	"	"
3312	"	"	"	"	"
3318	"	"	"	"	"
3329	"	"	"	"	"
3317	"	"	"	"	"
3323	"	"	"	"	"
3306	"	"	"	"	"
3303	"	"	"	"	"
3314	"	"	"	"	"
3301	"	"	"	"	"
3302	"	"	"	"	"
3307	"	"	"	"	"
3308	"	"	"	"	"
3305	"	"	"	"	"
3325	"	"	"	"	"
3310	"	"	"	"	"
3327	"	"	"	"	"
3315	"	"	"	"	"
3300	"	"	"	"	"
3378	"	"	"	Black sand..	"
3377	"	"	"	"	"
3388	"	"	"	"	"
3363	"	"	"	"	"
3391	"	"	"	"	"
3375	"	"	"	Yellow sand.	"
3393	"	"	"	"	"
3360	"	"	"	"	"
3376	"	"	"	"	"
3366	"	"	"	"	"
3373	"	"	"	"	"
3396	"	"	"	"	"
3397	"	"	"	"	"
3367	"	"	"	"	"
3369	"	"	"	"	"
3365	"	"	"	"	"
3372	"	"	"	"	"
3390	"	"	"	"	"
3361	"	"	"	"	"
3394	"	"	"	"	"
3395	"	"	"	"	"
3364	"	"	"	"	"
3370	"	"	"	"	"
3362	"	"	"	"	"
3392	"	"	"	"	"
Ave., 100 samples.					
3353	E. A. Pierce.....	Middlefield..	Geauga..	Sandy loam.	Utah, 5773
3354	"	"	"	"	Gr. Kl. Wanz (Dippe) 5772
3355	"	"	"	"	Gr. Kl. W. (Hoerning) 5771
Ave. 3 samples ...					
3346	Thos. Oberlitner..	Deshler.....	Henry...	Black muck..	Klein Wanzlebener
3347	"	"	"	" sand..	French, very rich (Vilmorin) 5769
3348	"	"	"	Yellow sand.	Klein Wanzlebener
3349	"	"	"	Black muck..	French, very rich (Vilmorin) 5769
3350	"	"	"	Sandy.....	Utah, 5773
3351	P. T. Michael.....	"	"	Clay loam...	French, very rich (Vilmorin) 5769
3352	"	"	"	"	Gr. Kl. Wanz (Strandes) 5770
3455	"	"	"	Black loam..	Gr. Kl. W. Elite (Dippe) 5772
3456	"	"	"	"	Gr. Kl. Wanz (Hoerning) 5771
3457	"	"	"	"	Utah, 5773
Ave., 10 samples..					

INVESTIGATIONS IN OHIO FOR 1901—Continued.

Date of planting	Width between rows— inches	Date of sampling	Date of analysis	Average weight of beets— ozs.	Sucrose in beets— per cent	Purity coefficient	Laboratory No.
May 6	21	Oct. 2	Oct. 7	5.7	15.9	90.2	3278
" 6	21	" 2	" 7	8.8	15.7	91.6	3274
" 6	21	" 2	" 7	11.8	15.6	85.4	3279
" 6	21	" 2	" 7	11.5	16.2	80.8	3276
" 6	21	" 2	" 7	10.1	15.1	87.8	3269
" 6	21	" 2	" 7	11.7	16.	88.	3273
" 6	21	" 15	" 21	12.4	14.9	86.2	3328
" 6	21	" 15	" 19	13.2	15.8	89.6	3320
" 6	21	" 15	" 19	11.7	14.9	90.	3313
" 6	21	" 15	" 19	6.6	14.4	87.7	3319
" 6	21	" 15	" 19	14.5	13.9	84.9	3326
" 6	21	" 15	" 19	14.7	14.8	85.1	3321
" 6	21	" 15	" 19	11.2	15.9	87.8	3316
" 6	21	" 15	" 19	12.1	15.9	88.8	3312
" 6	21	" 15	" 19	11.3	17.1	89.8	3318
" 6	21	" 15	" 21	13.8	16.5	87.3	3329
" 6	21	" 15	" 19	11.2	15.4	88.4	3317
" 6	21	" 15	" 19	8.4	15.3	85.5	3323
" 6	21	" 15	" 19	7.8	15.7	86.8	3306
" 6	21	" 15	" 19	8.8	17.1	88.9	3303
" 6	21	" 15	" 19	6.5	16.1	89.4	3314
" 6	21	" 15	" 19	14.3	16.7	86.1	3301
" 6	21	" 15	" 19	8.7	16.5	88.2	3302
" 6	21	" 15	" 19	8.6	16.6	88.2	3307
" 6	21	" 15	" 19	8.6	16.9	88.	3308
" 6	21	" 15	" 19	9.4	15.4	86.	3305
" 6	21	" 15	" 19	8.	15.8	84.1	3325
" 6	21	" 15	" 19	5.6	16.9	88.8	3310
" 6	21	" 15	" 19	14.2	13.9	81.	3327
" 6	21	" 15	" 19	11.5	14.9	83.2	3315
" 6	21	" 15	" 19	9.9	15.9	84.7	3300
" 6	21	" 29	Nov. 4	9.5	16.6	88.2	3378
" 6	21	" 29	" 4	8.4	19.2	87.2	3377
" 6	21	" 29	" 5	11.	15.8	85.9	3388
" 6	21	" 29	" 2	6.7	15.2	86.4	3363
" 6	21	" 29	" 5	5.7	16.6	84.3	3391
" 6	21	" 29	" 4	11.6	16.5	86.4	3375
" 6	21	" 29	" 5	8.6	17.6	86.5	3393
" 6	21	" 29	" 2	23.6	16.1	87.5	3360
" 6	21	" 29	" 4	7.6	15.9	86.5	3376
" 6	21	" 29	" 2	13.8	16.7	86.1	3366
" 6	21	" 29	" 4	7.1	18.	88.6	3373
" 6	21	" 29	" 5	7.2	17.6	85.5	3396
" 6	21	" 29	" 5	5.2	15.6	87.1	3397
" 6	21	" 29	" 2	6.	16.8	86.2	3367
" 6	21	" 29	" 4	6.1	20.7	84.4	3369
" 6	21	" 29	" 2	7.2	16.7	86.	3365
" 6	21	" 29	" 4	7.2	16.8	89.2	3372
" 6	21	" 29	" 5	4.4	16.3	83.7	3390
" 6	21	" 29	" 2	6.7	16.5	85.5	3361
" 6	21	" 29	" 5	4.8	15.2	86.	3394
" 6	21	" 29	" 5	2.9	16.3	87.2	3395
" 6	21	" 29	" 2	4.2	17.2	85.7	3364
" 6	21	" 29	" 4	4.2	19.2	87.3	3370
" 6	21	" 29	" 2	4.7	18.3	86.8	3362
" 6	21	" 29	" 5	5.7	15.5	82.7	3392
				10.0	16.2	89.7	
April 29	20	Oct. 22	Nov. 2	13.4	16.7	82.5	3353
" 29	20	" 22	" 2	13.5	16.5	86.4	3354
" 29	20	" 22	" 2	17.4	16.	83.1	3355
				14.8	16.4	84.	
May 10	20	Oct. 30	Nov. 2	24.8	11.4	72.6	3346
" 8	20	" 25	" 2	31.	14.7	82.4	3347
" 8	20	" 28	" 2	25.7	13.4	81.1	3348
" 8	20	" 2	" 2	21.	14.3	77.7	3349
" 8	20	Oct. 22	" 2	15.	13.2	78.5	3350
" 10	20	" 30	" 2	8.2	15.5	81.5	3351
" 10	20	" 30	" 2	12.7	15.5	83.8	3352
June 3	20	Nov. 9	" 11	10.3	17.2	87.	3455
" 3	20	" 9	" 12	8.8	15.6	80.	3456
" 3	20	" 9	" 12	7.5	16.5	86.5	3457
				16.5	14.7	88.1	

TABLE I: DETAILED RESULT OF SUGAR BEET

Laboratory No.	Name of grower	Postoffice	County	Character of soil	Variety
3424	Addison C. Culp	Empire	Jefferson	White	French, very rich (Vilmorin) 5769
3434	Jno. Schaible	Elyria	Lorain	Muck	Gr. Kl. Wanz. (Hoerning) 5771
3435	"	"	"	"	Gr. Kl. W. Elite (Dippe) 5772
3436	"	"	"	"	Gr. Kl. W. (Strandes) 5770
3437	"	"	"	"	French, very rich (Vilmorin) 5769
	Ave., 4 samples...				
3404	DeForest Wall	Sharon Center	Medina	Sandy	Gr. Kl. W. (Hoerning) 5771
3405	"	"	"	"	Klein Wanzlebener
3406	"	"	"	"	French, very rich (Vilmorin) 5769
	Ave., 3 samples...				
3483	Jos. Dube	Oak Harbor	Ottawa		
3416	C. F. Coleman	Genoa		Loam	French, very rich (Vilmorin) 5769
3419	"	"	"	"	Klein Wanzlebener
3417	"	"	"	"	Gr. Kl. W. (Hoerning) 5771
3418	"	"	"	"	Gr. Kl. W. Elite (Dippe) 5772
	Ave., 5 samples...				
3425	Frank O. Kranz	Batson	Paulding	Black loam	French, very rich (Vilmorin) 5769
3403	Jno. F. Clevenger	Kalida	Putnam	Black loam	Gr. Kl. Wanz. (Strandes) 5770
3402	"	"	"	"	French, very rich (Vilmorin) 5769
3401	"	"	"	"	Gr. Kl. W. (Hoerning) 5771
3400	"	"	"	"	Gr. Kl. W. Elite (Dippe) 5772
3442	A. M. Brown	Ottawa	"	"	Gr. Kl. W. (Strandes) 5770
3441	"	"	"	"	Gr. Kl. W. (Hoerning) 5771
3440	"	"	"	"	French, very rich (Vilmorin) 5769
	Ave., 7 samples...				
3467	C. E. Myers	Burgoon	Sandusky	Loam	Utah, 5773
3468	"	"	"	"	French (Vilmorin) 5769
3469	"	"	"	"	Gr. Kl. W. Elite (Dippe) 5772
3470	"	"	"	"	Gr. Kl. Wanz. (Strandes) 5770
3471	"	"	"	"	Gr. Kl. W. (Hoerning) 5771
3447	J. P. Tucker	Freemont	Sandusky	Black clay	French, very rich (Vilmorin) 5769
3446	"	"	"	"	Gr. Kl. W. (Strandes) 5770
3448	"	"	"	"	Gr. Kl. W. (Hoerning) 5771
3449	"	"	"	"	Gr. Kl. W. Elite (Dippe) 5772
3445	"	"	"	"	Utah, 5773
3340	D. H. McGrady	"	"	"	Utah, 5773
3341	"	"	"	"	Klein Wanzlebener
3339	"	"	"	"	French, very rich (Vilmorin) 5769
3338	T. F. Siegfried	"	"	Black loam	Klein Wanzlebener
3337	Jno. Maires	"	"	Black clay	"
3384	M. H. Crowell	"	"	Black loam	Gr. Kl. W. Elite (Dippe) 5772
3385	"	"	"	"	Gr. Kl. W. (Hoerning) 5771
3387	"	"	"	"	Gr. Kl. W. (Strandes) 5770
3383	"	"	"	"	French, very rich (Vilmorin) 5769
3293	I. W. Walton	"	"	"	"
3294	"	"	"	"	Gr. Kl. W. (Strandes) 5770
3295	"	"	"	"	Gr. Kl. W. (Hoerning) 5771
3296	"	"	"	Black loam	Gr. Kl. W. Elite (Dippe) 5772
3297	"	"	"	"	Utah, 5773
3298	"	"	"	"	"
3299	"	"	"	"	Gr. Kl. W. (Hoerning) 5771
3288	"	"	"	Black sand	French (Vilmorin) 5769
3289	"	"	"	"	Gr. Kl. W. (Strandes) 5770
3291	"	"	"	"	Gr. Kl. W. (Hoerning) 5771
3287	"	"	"	"	Gr. Kl. W. Elite (Dippe) 5772
3290	"	"	"	Yellow sand	Utah, 5773
3292	"	"	"	"	Original Klein Wanz.
3331	"	"	"	"	French (Vilmorin) 5769
3332	"	"	"	"	Gr. Kl. W. (Strandes) 5770
3333	"	"	"	"	Gr. Kl. W. (Hoerning) 5771
3334	"	"	"	"	Gr. Kl. W. Elite (Dippe) 5772
3335	"	"	"	"	Utah, 5773
3336	"	"	"	"	Original Klein Wanz.

INVESTIGATIONS IN OHIO FOR 1901.

Date of planting	Width between rows— inches	Date of sampling	Date of analysis	Average weight of beets— ozs.	Sucrose in beets— percent	Purity coefficient	Laboratory No.
.....	42	Nov. 6	Nov. 7	2.7	13.8	78.1	3424
May 7	20	Oct. 20	Nov. 9	15.1	14.6	82.8	3434
" 7	20	" 20	" 9	26.7	14.4	81.3	3435
" 7	20	" 20	" 9	17.8	14.6	84.1	3436
" 7	20	" 20	" 9	27.4	14.7	82.9	3437
				21.7	14.6	82.8	
May 20	36	Nov. 4	Nov. 6	11.5	12.8	76.5	3404
" 20	36	" 4	" 6	17.3	12.4	76.7	3405
" 20	36	" 4	" 6	11.1	12.8	77.3	3406
				13.3	12.7	76.8	
.....	.....	.....	Oct. 26	16.3	15.1	79.2	3483
May 4	18	Nov. 5	Nov. 7	37.1	13.7	80.5	3416
" 4	18	" 5	" 7	21.3	14.	81.8	3419
" 4	18	" 5	" 7	28.6	12.7	80.8	3417
" 4	18	" 5	" 7	27.8	12.1	77.2	3418
				26.2	13.5	79.9	
May 13	20	Nov. 5	Nov. 7	13.1	14.1	80.6	3425
April 22	36	Nov. 4	Nov. 6	19.4	10.9	74.9	3403
" 22	36	" 4	" 6	17.1	10.7	73.3	3402
" 22	36	" 4	" 6	22.6	10.7	73.3	3401
" 22	36	" 4	" 6	19.4	11.8	76.8	3400
.....	.....	.....	" 11	17.1	11.4	79.1	3442
.....	.....	.....	" 9	34.1	10.6	81.	3441
.....	.....	.....	" 9	16.3	12.8	78.7	3440
				20.9	11.3	76.7	
May 15	20	Nov. 13	Nov. 18	11.	13.9	80.4	3467
" 15	20	" 13	" 18	8.7	11.6	81.9	3468
" 15	20	" 13	" 18	15.5	11.3	77.5	3469
" 15	20	" 13	" 18	9.	11.6	79.8	3470
" 15	20	" 13	" 18	19.8	10.4	74.2	3471
May 4	20	Nov. 7	Nov. 9	11.	11.2	79.6	3447
" 4	20	" 7	" 9	10.2	13.7	82.3	3446
" 4	20	" 7	" 9	11.5	12.8	80.5	3448
" 4	20	" 7	" 9	15.3	12.4	81.8	3449
" 4	20	" 7	" 9	20.	12.1	82.5	3445
" 11	20	Oct. 19	" 2	8.3	13.8	79.6	3340
" 11	20	" 19	" 2	10.8	14.4	80.6	3341
" 11	20	" 19	" 2	11.7	12.	76.2	3339
" 6	20	" 22	" 2	15.	13.6	82.5	3338
" 17	20	" 15	" 2	13.	14.5	82.4	3337
April 27	20	Nov. 2	" 5	16.3	11.8	78.2	3384
" 27	20	" 2	" 5	15.6	13.7	79.2	3385
" 27	20	" 2	" 5	22.	12.3	76.2	3387
" 27	20	" 2	" 5	34.4	10.2	74.7	3383
June 17	.....	Oct. 15	Oct. 18	.....	11.	.....	3293
" 17	20	" 15	" 18	.....	12.8	.....	3294
" 17	20	" 15	" 18	.....	11.4	.....	3295
.....	.....	" 15	" 18	.....	12.3	.....	3296
.....	.....	" 15	" 18	.....	11.3	75.2	3297
.....	.....	" 15	" 18	.....	10.7	76.	3298
.....	.....	" 15	" 18	.....	11.6	76.3	3299
.....	.....	" 15	" 18	.....	10.2	74.8	3288
May 17	20	Oct. 5	" 8	16.	9.	73.	3289
" 17	20	" 5	" 8	18.6	9.2	75.2	3291
" 17	20	" 5	" 8	18.8	9.6	76.5	3287
" 17	20	" 5	" 8	20.5	12.4	79.4	3290
" 17	20	" 5	" 8	19.	11.5	79.6	3292
" 17	20	" 5	" 8	18.8	11.6	74.4	3331
.....	.....	" 29	Nov. 2	15.6	13.2	79.7	3332
.....	.....	" 29	" 2	13.5	13.2	81.6	3333
.....	.....	" 29	" 2	10.1	14.5	81.6	3334
.....	.....	" 29	" 2	17.	13.6	81.6	3335
.....	.....	" 29	" 2	14.5	13.6	82.	3336
.....	.....	" 29	" 2	14.3	13.6	82.	3336

TABLE I: DETAILED RESULTS OF SUGAR BEET

Laboratory No.	Name of grower	Postoffice	County	Character of soil	Variety
3342	I. W. Walton.....	Fremont.....	Sandusky..	Black loam..	Original Klein Wanz
3343	.....	.....	.....	Clay loam..	.....
3344	Moses Reed.....	Kingsway.....	Sandusky..	Sandy loam..	Klein Wanzlebener
3345	Ave., 35 samples..	.....	.....	.....	Utah, 5773
3381	A. F. Shriver.....	Louisville.....	Stark.....	Clay.....	Gr. Kl. W. Elite (Dippe) 5772
3382	.....	.....	.....	Black loam..	Gr. Kl. W. (Hoerning) 5771
3386	.....	.....	.....	.....	Klein Wanzlebener
3389	Ave., 4 samples...	.....	.....	.....	French (Vilmorin) 5769
3432	R. J. Dallinger.....	Akron.....	Summit....	.....	French (Vilmorin) 5769
3433	Ave., 2 samples..	.....	.....	.....	Utah, 5773
3439	T. G. Lane.....	Farmedale....	Trumbull..	.....	.....
3438	R. B. Turkins.....	Kenilworth....	.....	.....	.....
3399	Geo. C. Campbell..	Warren.....	.....	Sdy. bottom.	Klein Wanzlebener
3450	Chas. B. Selby....	.....	.....	.....	.....
3450	Ave., 4 samples..	.....	.....	.....	.....
3430	Philip Lamneck...	Pt. Washing'tn	Tuscarraw's	Sandy loam..	French (Vilmorin) 5769
3431	Ave., 2 samples..	.....	.....	.....	Klein Wanzlebener
3426	G. M. Sandlebach..	Delphos.....	Van Wert..	Mixed clay..	French (Vilmorin) 5769
3427	.....	.....	.....	.....	Gr. Kl. W. (Hoerning) 5771
3428	.....	.....	.....	.....	Gr. Kl. W. (Strandes) 5770
3429	.....	.....	.....	.....	Gr. Kl. W. Elite (Dippe) 5772
3412	E. B. Westenhaver	Wetsel.....	.....	Dk. clay l'm.	Gr. Kl. W. (Strandes) 5770
3413	.....	.....	.....	.....	Gr. Kl. W. Elite (Dippe) 5772
3414	.....	.....	.....	.....	French (Vilmorin) 5769
3415	Ave., 8 samples..	.....	.....	.....	Gr. Kl. W. (Hoerning) 5771
3356	Floyd Lehman.....	Madisonburg..	Wayne.....	Gravelly c'y..	Klein Wanzlebener
3358	.....	.....	.....	Clay loam..	.....
3357	.....	.....	.....	Clay.....	Gr. Kl. W. Elite (Dippe) 5772
3459	Timothy Buckley..	Wooster.....	.....	Bottomland.	French (Vilmorin) 5769
3460	Ave., 5 samples..	.....	.....	.....	Gr. Kl. W. (Strandes) 5770
3398	Edward Swartz....	Lime City.....	Wood.....	Clay loam..	Klein Wanzlebener

INVESTIGATIONS IN OHIO FOR 1901—Concluded.

Date of planting	Width between rows— inches	Date of sampling	Date of analysis	Average weight of beets— ozs.	Sucrose in beets— per cent	Purity coefficient	Laboratory No.
		Nov. 1	Nov. 2	8.5	14.6	81.7	3342
		" 1	" 2	11.3	13.9	85.1	3343
May 10	20	Oct. 28	Nov. 2	13.6	15.5	82.9	3344
" 10	20	" 28	" 2	15.8	14.4	79.5	3345
				15.	12.4	79.1	
May 5	16	Nov. 3	Nov. 5	11.5	13.2	80.5	3381
" 5	16	" 3	" 5	13.2	13.3	80.2	3382
" 5	16	" 2	" 5	12.3	11.2	74.8	3386
" 5	16	" 3	" 5	19.3	12.8	79.5	3389
				14.1	12.6	78.7	
			Nov. 9	5.8	10.6	76.3	3432
			" 9	6.3	10.7	78.	3433
				6.1	10.6	77.1	
			Nov. 9	20.1	10.1	75.3	3439
May 15	18	Nov. 3	" 9	20.1	10.9	77.5	3438
			" 9	5.3	14.2	83.3	3399
			" 9	6.2	13.7	84.2	3450
				12.9	12.2	80.1	
June 1	16	Nov. 6	Nov. 9	7.5	11.5	75.4	3430
" 1	16	" 6	" 9	11.2	11.9	75.6	3431
				9.4	11.7	75.5	
May 10	30	Nov. 4	Nov. 9	10.7	13.5	82.	3426
" 10	30	" 4	" 9	11.7	14.2	82.	3427
" 10	30	" 4	" 9	11.4	12.4	79.2	3428
" 10	30	" 4	" 9	9.6	11.3	77.5	3429
April 15	22	" 5	" 6	12.9	14.5	81.9	3412
" 15	22	" 5	" 6	11.6	14.6	81.1	3413
" 15	22	" 5	" 6	11.8	14.2	82.4	3414
" 15	22	" 5	" 6	14.7	15.3	81.5	3415
				11.8	13.7	78.4	
May 13	20	Oct. 29	Nov. 2	5.8	13.6	80.	3356
" 14	20	" 28	" 2	10.	12.8	80.2	3358
" 13	20	" 29	" 2	7.7	16.	83.	3357
" 5		Nov. 2	" 14	10.6	11.7	75.2	3459
" 5		" 2	" 14	10.3	11.2	77.2	3460
				8.9	13.1	79.1	
May 10	24	Nov. 2	Nov. 11	20.	15.1	85.	3398

TABLE II: SUMMARY OF TABLE I

County	No. of samples	Average weight of beets, ozs.	Sugar in beets, per cent	Purity coefficient
NORTHERN SECTION				
Crawford	2	34.2	10.6	76.9
Fulton	100	10.0	16.2	89.7
Geauga	3	14.8	16.4	84.0
Henry	10	16.5	14.7	88.1
Lorain	4	21.7	14.6	82.8
Medina	3	13.3	12.7	76.1
Ottawa	5	26.2	13.5	79.1
Paulding	1	13.1	14.1	80.1
Putnam	7	20.9	11.3	76.1
Sandusky	35	15.0	12.4	79.1
Stark	4	14.1	12.6	78.7
Summit	2	6.1	10.6	77.1
Trumbull	4	12.9	12.2	80.1
Van Wert	8	11.8	13.7	78.4
Wayne	5	8.9	13.1	79.1
Wood	1	20.0	15.1	85.0
MIDDLE SECTION				
Auglaize	4	14.9	11.5	80.4
Champaign	6	8.6	8.3	71.3
Clark	8	8.2	12.5	81.1
Franklin	1	5.6	13.3	78.7
Jefferson	1	2.7	13.8	78.1
Tuscarawas	2	9.4	11.7	75.5
SUMMARY				
Northern section	194	12.9	14.5	85.0
Middle section	22	9.3	11.2	77.5
Entire state	216	11.2	12.8	81.2

TABLE III: COMPARISON OF GENERAL RESULTS FOR 1897, 1898, 1899, 1900 AND 1901

Section	Number of samples					Average weight of beets —ounces				
	1897	1898	1899	1900	1901	1897	1898	1899	1900	1901
Southern section.....	67	51	20	20	....	31.4	18.4	21.6	12.5	.....
Middle section.....	132	153	18	57	22	32.6	19.6	23.5	15.9	9.3
Northern section.....	355	294	93	226	194	29.2	25.0	20.5	12.6	12.9
Entire state.	554	498	131	303	216	30.6	22.7	21.1	13.2	11.2

TABLE III: COMPARISON OF GENERAL RESULTS FOR 1897, 1898, 1899, 1900 AND 1901

Sugar in beets—per cent					Purity coefficient				
1897	1898	1899	1900	1901	1897	1898	1899	1900	1901
12.2	10.9	12.1	8.1	.....	75.3	76.9	77.5	67.5	.....
13.2	11.1	12.0	10.7	11.2	78.0	76.9	77.8	77.4	77.5
13.6	11.6	13.0	11.3	14.5	79.4	78.7	81.5	77.8	85.0
13.3	11.4	12.7	10.9	12.8	78.7	77.9	80.2	77.1	81.2

TABLE IV: VARIETY TESTS AT FREMONT

Date of analysis	5769 French, very rich (Vilmorin)			5770 Gr. Kl. Wanzlebener (Strandes)			5771 Gr. Kl. Wanzlebener (Hoernings)		
	Average wt. of beets—(grammes)	Sugar in beets—per ct.	Purity	Average wt. of beets—(grammes)	Sugar in beets—per ct.	Purity	Average wt. of beets—(grammes)	Sugar in beets—per ct.	Purity
October 2.....	450	10.2	74.8	526	9.	73.0	533	9.2	75.2
“ 15.....	.....	11.0	.....	.....	12.8	.....	.....	11.4	.....
“ 29.....	443	11.6	74.4	382	13.2	79.7	370	13.2	81.6

TABLE IV: VARIETY TESTS AT FREMONT.

5772 Gr. Kl. Wanzlebener (Dippe)			5773 Utah			Original Klein Wanzlebener		
Average wt. of beets—(grammes)	Sugar in beets—per cent	Purity	Average wt. of beets—(grammes)	Sugar in beets—per cent	Purity	Average wt. of beets—(grammes)	Sugar in beets—per cent	Purity
580	9.6	76.5	538	12.4	79.4	553	11.5	79.6
.....	12.3	.....	.....	11.3	75.2	.....	11.6	76.0
481	14.5	81.6	412	13.6	81.6	405	13.6	82.0

TABLE V: VARIETY TESTS AT NEAPOLIS

Date of analysis	5769 French, very rich (Vilmorin)			5770 Gr. Kl. Wanzlebener (Strandes)			5771 Gr. Kl. Wanzlebener (Hoernings)		
	Average wt. of beets—grammes	Sugar in beets—per ct.	Purity	Average wt. of beets—grammes	Sugar in beets—per ct.	Purity	Average wt. of beets—grammes	Sugar in beets—per ct.	Purity
Sept. 24, 1901..	243	12.8	88.2	203	13.9	88.	201	13.3	87.5
Oct. 2, 1901....	309	14.4	88.9	337	13.9	88.5	297	14.8	86.6
“ 15, 1901...	434	14.5	88.3	393	14.9	88.6	479	15.9	88.8
“ 29, 1901...	256	15.8	85.9	340	16.4	88.1	330	16.4	88.5

TABLE V: VARIETY TESTS AT NEAPOLIS

5772 Gr. Kl. Wanzlebener (Elite Dippe)			5773 Utah			Original Klein Wanzlebener		
Average wt. of beets—grammes	Sugar in beets—per ct.	Purity	Average wt. of beets—grammes	Sugar in beets—per ct.	Purity	Average wt. of beets—grammes	Sugar in beets—per ct.	Purity
156	14.1	86.5	172	13.7	87.8	242	14.5	86.4
277	14.6	88.5	262	14.3	88.3	252	15.7	88.7
503	14.7	86.4	357	14.7	86.4	360	17.1	89.5
416	14.6	83.6	263	16.1	84.4	267	16.9	87.6

*2 Ex. Sta. 132.

TABLE VI: FERTILIZER EXPERIMENTS ON YELLOW SAND AT NEAPOLIS.

Plot No.	Fertilizer applied per acre	Date analyzed	Average wt of beets—(grammes)	Sugar in beets—per cent	Purity
1	None	Oct. 2, 1901	587	16.6	87.9
		" 15, 1901	416	14.8	85.1
		" 29, 1901	328	16.5	86.4
2	Acid phosphate, 160 pounds	Oct. 2, 1901	396	16.6	88.0
		" 15, 1901	316	15.9	87.8
		" 29, 1901	243	17.6	86.5
3	Potassium Sulfate, 160 pounds	Oct. 2, 1901	505	14.4	86.4
		" 15, 1901	343	15.9	88.8
		" 29, 1901	670	16.1	87.5
4	None	Oct. 2, 1901	297	16.1	88.9
		" 15, 1901	320	17.1	89.8
		" 29, 1901	215	15.9	86.5
5	Sodium Nitrate, 100 pounds	Oct. 2, 1901	354	15.6	90.1
		" 15, 1901	391	16.5	87.3
		" 29, 1901	392	16.7	86.1
6	Acid phosphate, 160 pounds Sodium Nitrate, 160 pounds	Oct. 2, 1901	331	15.7	88.6
		" 15, 1901	316	15.4	88.4
		" 29, 1901	201	18.0	88.6
7	None	Oct. 2, 1901	301	14.7	86.5
		" 15, 1901	339	15.3	85.5
		" 29, 1901	203	17.6	85.5
8	Acid phosphate, 160 pounds Potassium Sulfate, 100 pounds	Oct. 2, 1901	303	15.3	87.0
		" 15, 1901	221	15.7	86.8
		" 29, 1901	149	15.6	87.1
9	Sodium Nitrate, 160 pounds Potassium Sulfate, 100 pounds	Oct. 2, 1901	508	15.4	87.6
		" 15, 1901	251	17.1	88.9
		" 29, 1901	168	16.8	86.2
10	None	Oct. 2, 1901	254	16.1	89.4
		" 15, 1901	186	16.1	89.4
		" 29, 1901	175	20.7	88.1
11	Acid phosphate, 160 pounds Sodium Nitrate, 160 pounds Potassium Sulfate, 100 pounds	Oct. 2, 1901	245	15.9	89.7
		" 15, 1901	405	16.7	86.1
		" 29, 1901	204	16.7	86.0
12	Acid phosphate, 160 pounds Sodium Nitrate, 160 pounds Potassium Chlorid, 100 pounds	Oct. 2, 1901	332	16.0	87.4
		" 15, 1901	240	16.5	88.2
		" 29, 1901	202	16.8	89.2
13	None	Oct. 2, 1901	162	16.4	89.6
		" 15, 1901	245	16.6	88.2
		" 29, 1901	124	16.3	83.7
14	Acid phosphate, 70 pounds Potassium Sulfate, 100 pounds Tankage (9 & 20) 345 pounds	Oct. 2, 1901	371	15.5	89.0
		" 15, 1901	242	16.9	88.0
		" 29, 1901	191	16.5	85.5

TABLE VI: FERTILIZER EXPERIMENTS ON YELLOW SAND AT NEAPOLIS—Concluded

Plot No.	Fertilizer applied per acre	Date analyzed	Average wt. of beets—(grammes)	Sugar in beets—per cent	Purity
15	Acid phosphate, 160 pounds Sodium Nitrate, 80 pounds Potassium Sulfate, 50 pounds	Oct. 2, 1901	163	15.9	90.2
		" 15, 1901	267	15.4	86.0
		" 29, 1901	127	15.2	86.0
16	None	Oct. 2, 1901	249	15.7	91.6
		" 15, 1901	225	15.8	84.1
		" 29, 1901	85	16.3	87.2
17	Acid phosphate, 320 pounds Sodium Nitrate, 320 pounds Potassium Sulfate, 200 pounds	Oct. 2, 1901	335	15.6	85.4
		" 15, 1901	158	16.9	88.8
		" 29, 1901	119	17.2	85.7
18	Thomas slag, 8 pounds Sodium Nitrate, 8 pounds Potassium Sulfate, 5 pounds	Oct. 2, 1901	325	16.2	86.8
		" 15, 1901	401	13.9	81.0
		" 29, 1901	118	19.2	87.3
19	None	Oct. 2, 1901	287	15.1	87.8
		" 15, 1901	326	14.9	83.2
		" 29, 1901	134	18.3	86.8
20	Manure, 8 tons	Oct. 2, 1901	333	16.0	88.0
		" 15, 1901	282	15.9	84.7
		" 29, 1901	161	15.5	82.7

TABLE VII: FERTILIZER EXPERIMENTS ON BLACK SAND AT NEAPOLIS

Plot No.	Fertilizer applied per acre	Date analyzed	Average wt. of beets—(grammes)	Sugar in beets—per ct.	Purity	Yield per acre—pounds	Increase per acre—pounds	Gross sugar yield per acre—pounds
1	None	Oct. 2, 1901	358	13.5	88.2	8,700		1,444
		" 15, 1901	350	14.9	86.2			
		" 29, 1901	268	16.6	88.2			
2	Acid phosphate, 160 pounds	Oct. 2, 1901	217	15.4	88.5	8,740	260	1,608
		" 15, 1901	373	15.8	89.6			
		" 29, 1901	237	18.4	87.2			
3	Acid phosphate, 160 pounds, Potassium sulfate, 100 pounds	Oct. 2, 1901	279	11.7	89.7	13,560	3,980	2,142
		" 15, 1901	330	14.9	90.0			
		" 29, 1901	308	15.8	85.9			
4	None	Oct. 2, 1901	221	14.2	87.6	9,360	1,422
		" 15, 1901	187	14.4	87.7			
		" 29, 1901	191	15.2	86.4			
5	Acid phosphate, 160 pounds Nitrate of soda, 160 pounds Potassium sulfate, 100 pounds	Oct. 2, 1901	327	15.0	89.8	17,100	8,070	2,838
		" 15, 1901	411	13.9	84.9			
		" 29, 1901	162	16.6	84.3			

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