CEREAL REVIEW

of the

OFFICE OF CEREAL INVESTIGATIONS

Bureau of Plant Industry,

U. S. Department of Agriculture.

Volume VIII.

1916.

January 7, 1916.

OFFICE NOTES.

Mr. D. E. Stephens, superintendent of the Eastern Oregon Dry Farming Substation, Moro, Ore., reached Washington on December 24, 1915, to spend some time in the preparation of his annual report. He will also prepare for publication a manuscript presenting the results with spring grains at Moro during the years 1911 to 1915, inclusive.

The following field men arrived in Washington on December 31, 1915, to spend some time in the office writing annual field reports and doing laboratory work: Mr. Jenkin W. Jones, superintendent of the Nephi Substation, Nephi, Utah; Mr. Louis C. Aicher, superintendent of the Aberdeen Substation, Aberdeen, Idaho; Mr. Noble C. Donaldson, in charge of cereal investigations at the Judith Basin Substation, Moccasin, Mont.; and Mr. Frank J. Piemeisel, agent in cereal disease investigations at University Farm, St. Paul, Minn. In addition to the preparation of their field reports Messrs. Aicher, Donaldson, and Jones will prepare manuscripts for publication.

Mr. Felix J. Schneiderhan, graduate of the Minnesota College of Agriculture in 1913, recently appointed scientific assistant in agronomy, reported at Washington on January 3. He will do laboratory work during the winter and in the spring probably will take charge of the cereal nursery work at the Amarillo Cereal Field Station at Amarillo, Texas.

Mr. Theodore E. Stoa, in charge of the field observations in flax investigations at Fargo, Williston, Hettinger and Langdon, N. Dak., reported in Washington on the 6th instant for the purpose of receiving instructions with regard to the recently inaugurated flax work in North Dakota.

Mr. Victor H. Florell, superintendent of the Cheyenne Experiment Farm, Archer, Wyo., has completed a summary of his annual report for the Wyoming Board of Farm Commissioners, and, together with Mr. Jenkin W. Jones, the former superintendent, will prepare a manuscript containing the results obtained at the Cheyenne Experiment Farm since its establishment in July, 1912.

Mr. Noble C. Donaldson has completed his annual field report for 1915 and is now preparing a manuscript on the cereal work at the Judith Basin Substation for the past eight years.

Mr. Jenkin W. Jones finished his report on the cereal work in 1915 at the Nephi (Utah) Substation while at Logan, Utah, and will now commence the preparation jointly with Mr. Florell of a manuscript covering the work at the Cheyenne Experiment Farm since July, 1912.

Western Wheat Classification

Nurseries in 1915.

During 1915, seven large nurseries were grown for the purpose of obtaining material for the classification of western wheats. A total of 3,140 nursery rows were sown, as shown in the tabulation below. With the exception of Chico, Cal., these were all spring nurseries.

No. of rows.	Station.
531	Cereal Field Station, Amarillo, Texas.
637	Minnesota Experiment Station, St. Paul, Minn.
787	Dickinson Substation, Dickinson, N. Dak.
723	Judith Basin Substation, Moccasin, Mont.
164	Aberdeen Branch Station, Aberdeen, Idaho.
152	Eastern Oregon Dry-Farming Substation, Moro, Ore.
146	Plant Introduction Garden, Chico, Cal.
3,140	

The more than 3,000 herbarium specimens obtained from these nurseries have been increased by considerable material obtained from the breeding nurseries at these and other stations. Together they total 4,000 or more specimens. All of this material has been mounted and will be ready for the herbarium as soon as the ripe heads and thrashed grain have been added.

FIELD NOTES.

VIRGINIA:

Arlington Farm. Jan. 7. Cereal crops appear to be in good condition and no winterkilling is yet evident. The weather conditions during the past two months have been quite favorable and no

extremely cold weather has occurred. During November the maximum temperature was 78 degrees; minimum, 25 degrees; and precipitation, 1.18 inches. In December, the maximum temperature was 62 degrees; minimum, 16 degrees; and precipitation, 2.79 inches. During the past week the weather has been mild with no precipitation. Maximum temperature for this period, 69 degrees (Jan. 2); minimum, 31 degrees (Jan. 1 and 2). The second snowstorm during the winter of 1915-16, approximately 6 inches, occurred on the morning of Jan. 7.

SOUTH DAKOTA:

Highmore Substation. Jan. 4. Mr. Morrison left Highmore for Brookings on Jan. 3 to confer with officials of the agricultural experiment station. He will leave for Washington, D. C., on the 12th. Mr. Morrison writes that a snowfall of six inches on Jan. 1 is general over the State. This will afford excellent protection to the winter grain and check injury from rabbits. Although some corn is still unhusked, general farm work is well advanced in most sections of the State. Farmers are more prosperous as a result of the excellent crops of the past season and are inclined to hold as much grain as possible for higher prices.

NORTH DAKOTA:

Williston Substation. Dec. 24. Considerable snow fell in this vicinity during the early part of November, which resulted in good sledding. The snow on the upland farming districts was too deep to permit hauling grain on wagons, while in the Williston Valley it was melted by successive warm days until not enough remained for sledding. For nearly a month the larger portion of the grain was hauled on sleds to elevators on either side of Williston. That which reached Williston was hauled on sleds to within four miles of the city, where it was transferred to tanks

on wagons, the wagons being furnished by the business men of Williston. Recently more snow has fallen and sledding is good. The winter so far has been mild.

CALIFORNIA:

Plant Introduction Garden (Chico). Dec. 29. The seeding of cereals has been finished. All of the plat plantings have emerged and look exceptionally well. They were made in triplicate, of which 153 are fiftieth-acre plats and 204 are of one two-hundredth acre each, the latter being increase work from last year's nursery. The nursery consists of 1,900 head and rod rows, which include the wheats seeded for Doctors Leighty and Love. During the past two weeks the weather has been favorable for the preparation of land for wheat and barley and farmers are busy seeding.

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OFFICE NOTES.

Second-page proof of Department Bulletin No. 336, entitled"Cereal Experiments in Maryland and Virginia," by Mr. T. R. Stanton, was read during the past week.

Mr. G. A. McMurdo, in charge of cereal investigations at the Akron Field Station, Akron, Colo., and Mr. J. D. Morrison, in charge of cereal investigations at the Highmore Substation, Highmore, S. Dak., arrived in Washington during the week of January 10 and will spend several months in the preparation of their annual reports and manuscripts for publication.

Dr. H. H. Love, professor of plant breeding at Cornell University, who is in charge of cereal breeding at the Cornell station, was a visitor at the Office on January 12 and 13. During his visit he consulted with the office men regarding the cooperative work at Cornell, and, as noted elsewhere, addressed the Office seminar on Thursday afternoon, January 13.

CANADA'S WHEAT YIELD FOR 1915 ESTIMATED.

From Commerce Reports of Dec. 8, 1915, we learn that according to an official estimate of the wheat yield in Canada this year, out of a total yield of 336,258,000 bushels there will be an exportable surplus of 228,132,000 bushels. The production is about

50 per cent greater than that of 1914, which crop exceeded any previous one. The average loss in cleaning, and allowance of 10 per cent for grain not of merchantable quality, is estimated at 33,625,000 bushels. The total amount retained for seeding next year's crop, say 14,000,000 acres, at 1.75 bushels per acre, is placed at 24,500,000 bushels. The amount required for food, averaging 6.25 bushels per head, is estimated at 50,000,000 bushels. The quantity of wheat and wheat flour estimated as available for export is 85,558,000 bushels in excess of the previous high record of 1913-14 and represents nearly 68 per cent of the total production of 1915.

AUSTRALIA HAS LARGE SURPLUS WHEAT CROP.

The problem of obtaining vessels to carry the Australian wheat crop to Europe is a serious one. The crop in 1914 was so short, in consequence of the excessive drought, that it was found necessary to import large quantities from the United States and Canada, but this year's surplus crop, available for export, is estimated at 100,000,000 bushels, to move which would require about 900 vessels of about 3,000 tons each. The present price asked for tonnage where vessels are available is 90s. ($21.89) a ton, or about three times the usual freight rates.

In consequence of the distance from Australia to Europe it is pointed out that vessels can make practically three voyages from the United States to Europe while making one from Australia. In past years sailing vessels have been employed to a large extent in moving the Australian wheat crop, but in consequence of the dangers likely to be encountered the proposition is not so attractive as ordinarily. Farmers have been advised to hold their wheat, instead of rushing it to Sydney, where it might overtax the storage capacity available. (Commerce Reports, Dec. 8, 1915.)

SEMINAR NOTES.

The first meeting of the Office Seminar for the winter of 1916 was held on January 11 in the Office of Cereal Investigations. Mr. Carleton spoke on "Some Suggestions on Cereal Investigations," noting some of the lines along which investigations have been made and where considerable work is still needed. He discussed particularly the results he had recently obtained in the study of the roots of cereals, especially those of wheat, and indicated some problems that yet remain unsolved.

On January 13, Dr. H. H. Love, professor of plant breeding at Cornell University, and cooperator of this Office, gave an illustrated talk before a special meeting of the Office Seminar on the methods used in varietal testing and cereal breeding at Ithaca. He also gave some of the results already obtained in the hybridization work with oats and wheat.

Mr. Frank N. Meyer, agricultural explorer in the Office of Foreign Seed and Plant Introduction, at a meeting of the Office Seminar held in the assembly room of the Bieber Building on January 18, gave an illustrated lecture on his cereal explorations in China. The principal cereals of China are rice, kaoliang, wheat, proso, corn, millets, hull-less oats and barley. Rice is the principal food of a little more than one-half of the inhabitants, while the kaoliangs are perhaps next in importance.

The following is a copy of an important memorandum recently prepared by the Cerealist for the information of all employees of the Office:

"A portion of a letter from Mr. R. Kent Beattie, Chief Inspector of the Federal Horticultural Board, reads as follows:

"The Board feels that we ought to refuse certification entirely of wheat infected with Puccinia glumarum in so far as shipments are concerned to Australia and the Argentine, or other regions where this disease is not known to occur. Let me suggest that you use precaution in your office to see that your Puccinia glumarum exposed wheats do not mingle with or come in contact with wheats grown in the eastern states, so that there will be no question of our ability to certify the latter under a partial certification scheme."

In view of this suggestion, which appears to be a very good one, it is expected that no member of the Office will allow any specimens of cereals to go out to foreign countries from any part of the United States west of about the 104th meridian without knowing pretty certainly that they are not infected with this rust.

In view of the fact that this very serious rust is not yet found east of the Rocky Mountains, great care must be exercised in transmitting any seed from the western United States to points in the Great Plains and eastern United States so that the Office may not in any way become involved in the introduction of this disease into any place where it does not now exist."

FIELD NOTES.

SOUTH DAKOTA:

Bellefourche Experiment Farm. (Newell) Jan. 21. The following yields were obtained from wheat, emmer, and rye varieties in 1915. The varieties were grown in triplicate fiftieth-acre plats and the yields given are the averages of the three plats of each variety, except as otherwise noted. The yields are the highest ever recorded on the experiment farm.

Winter Wheat, Emmer, and Rye. (Dry land).

Theiss	C.I.No.1561	66.3 bushels
Turkey	" " 1558	65.0 "
Turkey	" " 1571	65.0 "
Alberta Red	" " 2979	64.2 "
Turkey	" " 3055	64.1 "
Kharkov	" " 1442	63.8 "
Beloglina	" " 1667	63.8 "
Kharkov	" " 1583	62.6 "
Beloglina	" " 2239	59.4 "
Ghirka Winter	" " 1438	53.7 "

For comparison, the durum wheats, winter emmer, and rye noted below were grown in the same series of plats:

Kubanka	C.I.No.1440	(spring sown)	49.0 bushels
Rye (Minn.No.2)	" " 137		44.6 "
Black Winter emmer	" " 333	(one plat)	26.5 "

Comparative yields of Kharkov, C. I. No. 1442, and awnless separations from it:

Kharkov	C.I.No.1442	53.0 bushels
Selection	" " 1442-352	49.8 "
"	" " 1442-367	49.4 "
"	" " 1442-343	46.6 "
"	" " 1442-348	44.9 "
"	" " 1442-350	43.9 "

Comparative yields of Turkey, C. I. No. 3055, and of bearded selections from it:

Turkey	C.I.No.3055	53.3 bushels
Selection	" " 3055-173	57.7 "
"	" " 3055-159	55.4 "
"	" " 3055-209	42.7 "

Winter Wheat (Irrigated)

Kharkov	C.I.No.1583	66.3 bushels
Kharkov	" " 4207	61.3 "
Beloglina	" " 1667 (one plat)	52.1 "

Rye (Irrigated)

Minn. No. 2	C.I.No. 137	44.6 bushels
N.Dak. No. 959	" " 175 (one plat)	38.8 "

Spring Wheat (dry land)

Durum

Pererodka	C.I.No.1350	58.2 bushels
Arnautka 6Pl	" " 4064	56.2 "
Arnautka	" " 1493	54.9 "
Kubanka	" " 1516	54.5 "
Kubanka	" " 1440	54.4 "
Yellow Gharnovka	" " 1444	54.0 "

Fife

Marquis	C.I.No.3276	50.9 bushels
Power	" " 3025	43.4 "
Rysting	" " 3022	40.6 "
Ghirka	" " 1517	40.2 "
Glyndon	" " 2873	39.8 "

Preston

Preston	C.I.No.3087	47.2 "
Preston	" " 3081	46.9 "
Pioneer	" " 4324 (one plat)	45.4 "

Bluestem

Haynes	C.I.No.2874	42.0 bushels

Miscellaneous

Manchuria	C.I.No.2492	45.6 bushels
Changli	" " 2911	43.8 "
Prelude	" " 4323 (one plat)	35.4 "

Spring Wheat (Irrigated)

Durum

Kubanka	C.I.No.1440	22.0 bushels

Fife

Marquis	C.I.No.3276	18.0 bushels
Power	" " 3025	14.7 "

Preston

Pringle Champlain	C.I.No.4782	12.2 bushels

Bluestem

Haynes	C.I.No.2874	11.5 bushels

Miscellaneous

Defiance	C.I.No.3703	8.0 bushels

NORTH DAKOTA:

Dickinson Substation. Jan. 7. The weather during the month of December was mostly mild with but little snow. The maximum temperature was 42 degrees (Dec. 4); minimum, -12 degrees (Dec. 30 and 31). The minimum for the winter was -30 degrees (Jan 5). There is about 4 inches of snow on the ground. The precipitation for December was 0.22 inch. The mean temperature for the month was 19.7 degrees, which is slightly above the normal. The average wind velocity was 6.9 miles. The

precipitation for the year 1915 was about 19 inches, the normal being about 15.75 inches.

The different varieties of grain are being cleaned in preparation for seeding the varietal plats.

Jan. 15. The weather thus far in the month of January has been unusually cold. The maximum temperature was 34 degrees; minimum, -44 degrees (Jan. 12 and 13); mean maximum, 8 degrees; mean minimum, -16 degrees. The mean temperature was -4 degrees, as compared with a 24-year normal for January of 10.9 degrees. About 3 inches of snow has fallen during that time, making about 6 inches now on the ground.

CALIFORNIA: BIGGS RICE FIELD STATION ..... BIGGS
Ernest L. Adams, Assistant Agronomist (Supt.)

CALIFORNIA: PLANT INTRODUCTION GARDEN (S.P.I.D.) CHICO
Ernest L. Adams, Assistant Agronomist.

COLORADO: AKRON FIELD STATION ..... AKRON
George A. McMurdo, Assistant.

GEORGIA: STATE AGRICULTURAL COLLEGE ..... ATHENS
Ross R. Childs, Scientific Assistant.

IDAHO: ABERDEEN SUBSTATION ..... ABERDEEN
Louis C. Aicher, Assistant Agronomist (Supt.)

IOWA: AGRICULTURAL EXPERIMENT STATION ..... AMES
Lyman C. Burnett, Agent.
William Diehl, Collaborator.

KANSAS: HAYS BRANCH STATION ..... HAYS
Frederic A. Kiene, Assistant Agronomist.

KANSAS: STATE AGRICULTURAL COLLEGE ..... MANHATTAN
William M. Jardine, Collaborator.
Henry F. Roberts, Collaborator.

LOUISIANA: CROWLEY RICE EXPERIMENT STATION .... CROWLEY
J. Mitchell Jenkins, Assistant Agronomist (Supt.)

MARYLAND: AGRICULTURAL EXPERIMENT STATION ..... COLLEGE PARK
Nickolas Schmitz.

MINNESOTA: UNIVERSITY FARM ..... ST. PAUL
Edward M. Freeman, Collaborator.
Frank J. Piemeisel, Agent.
Edward C. Stakman, Collaborator.
Lee Alexander.

MISSOURI: AGRICULTURAL EXPERIMENT STATION ..... COLUMBIA
John B. Smith, Agent.

MONTANA: JUDITH BASIN SUBSTATION ..... MOCCASIN
Noble C. Donaldson, Scientific Assistant.

NEW YORK: CORNELL UNIVERSITY EXPERIMENT STATION ITHACA
William T. Craig, Agent.

NORTH CAROLINA: AGRICULTURAL EXPERIMENT STATION .. RALEIGH
Buxton White, Agent.

NORTH DAKOTA: DICKINSON SUBSTATION ..... DICKINSON
Ralph W. Smith, Scientific Assistant.

NORTH DAKOTA: AGRICULTURAL EXPERIMENT STATION .... FARGO
Theodore E. Stoa, Scientific Assistant.

NORTH DAKOTA: WILLISTON SUBSTATION ..... WILLISTON
F. Ray Babcock, Scientific Assistant.

OKLAHOMA: WOODWARD FIELD STATION ..... WOODWARD
John B. Sieglinger, Assistant Agriculturalist.

OREGON: HARNEY BRANCH STATION ..... BURNS
LeRoy R. Breithaupt, Agent (Supt.)

OREGON: EASTERN OREGON DRY-FARMING SUBSTATION .... MORO
David E. Stephens, Superintendent.

SOUTH DAKOTA: AGRICULTURAL EXPERIMENT STATION .... BROOKINGS
Manley J. Champlin, Collaborator.

SOUTH DAKOTA: HIGHMORE SUBSTATION ..... HIGHMORE
Joseph D. Morrison, Scientific Assistant.

SOUTH DAKOTA: BELLE FOURCHE EXPERIMENT FARM ..... NEWELL
John H. Martin, Scientific Assistant.

TENNESSEE: AGRICULTURAL EXPERIMENT STATION ..... KNOXVILLE
William T. Evans, Collaborator.

TEXAS: AMARILLO CEREAL FIELD STATION ..... AMARILLO
John F. Ross, Farm Superintendent.
Felix J. Schneiderhan, Scientific Assistant.

UTAH: NEPHI SUBSTATION ..... NEPHI
Jenkin W. Jones, Scientific Assistant (Supt.)

VIRGINIA: ARLINGTON FARM ..... ROSSLYN
Arthur D. Ellison, Scientific Assistant.

WASHINGTON: ADAMS BRANCH EXPERIMENT STATION ..... LIND
Max A. McCall, Agent (Supt.).

WASHINGTON: AGRICULTURAL EXPERIMENT STATION ..... PULLMAN
Horace M. Woolman, Collaborator.

WISCONSIN: AGRICULTURAL EXPERIMENT STATION ..... MADISON
Aaron G. Johnson, Agent.

WYOMING: CHEYENNE EXPERIMENT FARM ..... ARCHER
Victor H. Florell, Scientific Assistant (Supt.)

THE CEREAL REVIEW

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OFFICE NOTES.

Mr. F. R. Babcock has sent in completed first draft of his report of the cooperative cereal investigations at the Dickinson Substation, Dickinson, N. Dak., in 1915.

Mr. A. A. Potter's article entitled "The Control of Experimental Conditions in Phytopathological Research," has been published in the February number of Phytopathology.

Mr. F. J. Piemeisel, agent in the cooperative cereal disease investigations at University Farm, St. Paul, Minn., returned to his permanent headquarters on February 2.

Mr. Aicher has finished his report of the past year's work at the Aberdeen Substation, Aberdeen, Idaho, and is now preparing for publication a manuscript containing, in popular form, the results obtained since the substation was established.

Mr. L. R. Breithaupt, superintendent of the Harney Branch Substation, conducted cooperatively by this Office and the Oregon Experiment Station at Burns, Ore., arrived in Washington on Jan. 22 to spend some time in the preparation of his report of the cooperative investigations for the year 1915.

Mr. C. W. Warburton left on the 1st instant for Ames, Ia., where he will give a talk on oat production in Iowa at a joint meeting of the Iowa Agricultural Experiment Association and the Iowa Corn and Small Grain Growers' Association. He will return to Washington on February 8.

Mr. John F. Ross, superintendent of the Amarillo Cereal Field Station, Amarillo, Texas, returned to his station on February 2 to resume his duties. While in Washington he wrote the report of the past season's work at Amarillo and finished a manuscript entitled "Cereal Crops in the Panhandle of Texas," which it is proposed to publish as a Farmers' Bulletin.

In cooperation with the Washington Experiment Station a farm comprising a half section has been established 5 miles northeast of Lind, Adams Co., Wash., and will be known as the Adams Branch Experiment Station. Nearly all of the west half of the farm is now in fallow and will be sown to commercial wheat this spring, in order to discover major soil variations. Varietal tests and nursery rows of spring wheat will be sown on a small portion. The east half, now in stubble, will be fallowed next summer and used for rotation, tillage and other experiments in the fall of 1916.

Seminar Notes.

Dr. Erwin F. Smith, Chief of the Laboratory of Plant Pathology, of this Bureau, spoke before the seminar of the Office of Cereal Investigations on Tuesday, Jan. 25, on the bacterial diseases of the Gramineae, including cereals. The organisms causing Stewart's disease of sweet

corn, Cobb's disease of sugar cane, and "blight" or red spot disease of sorghums were described and the mode of infection and injury done were detailed. The bacterial blade blight of oats, a disease of the heads of orchard grass and of western wheat grass, and a leaf disease of barley were also discussed. The fact was brought out that many of these diseases are distributed on the seed.

On Tuesday and Wednesday, February 1 and 2, Dr. C. F. Marbut, of the Bureau of Soils, gave a talk before the seminar of the Office of Cereal Investigations on soil types. Dr. Marbut in his classification of soil groups laid much emphasis upon the age of the formation and the severity of the weathering agencies as affecting the character of the soil. He viewed the soil as a material undergoing slow but continual transformation and the relationships between soils as depending upon the stage of transformation as much as upon the original material itself.

MEMORANDUM NO. 154.

Oaths of Office of Temporary Field Employees.

Paragraph No. 2 of the Administrative Regulations is hereby amended to read as follows:

> "2. Oath of Office.--In all cases of original appointment, promotion, demotion, or transfer from one position to another, on the statutory roll, or of original appointment on a lump-fund roll, or of a transfer from the statutory roll of one bureau to the lump-fund roll of another bureau, an oath of office must be executed and filed with the latter bureau before any payment of salary under the new appointment will be made. An employee performing continuous service in the same bureau will not be required to take an additional oath of office in case of his promotion, demotion, transfer from one lump-fund roll to another, transfer from statutory to a lump-fund roll, or reassignment or other change of status on a lump-fund roll.

"Oaths of office, when required, must be taken without expense to the United States. They may be taken before any officer having an official seal, with authority to administer oaths either under United States statutes or local municipal law, and must be properly certified under the hand and seal of such officer. Oaths of office may also be taken before the chief clerk of the department or the chief clerk of any bureau or statutory division thereof in Washington, D. C., provided the chief clerk be one who occupies a statutory position.

"Forest guards and other field employees engaged for temporary or occasional service, receiving compensation from lump-fund appropriations are authorized to subscribe to the oath of office before a forest ranger or other commissioned employee of the Department. Oaths of office, or declarations and statement sheets of such employees shall be forwarded to the appointment clerk of the Department as soon as possible after execution."

D. F. Houston.

Secretary.

FIELD NOTES.

COLORADO:

Akron Field Station. Feb. 3. The following yields were obtained from spring barley and oats in 1915:

Barley.

C.I.No.	Variety.	No. of Plats.	Av. Yield.
602	Hannchen	11	86.0 bus.
658	Ouchac	1	80.9 "
690	Coast	2	79.1 "
878	Blackhull	1	77.1 "
---	White Smyrna	1	75.7 "
351	Orel	1	73.3 "
24	Hanna	1	72.2 "
226	Hanna	1	70.5 "
---	Composite	1	66.0 "
595	Nepal	2	56.0 "
---	Oderbrucker	1	55.5 "

Oats.

459	Kherson	14	85.0 "
165	Sixty Day	2	82.6 "
293	Burt	2	82.6 "
619	Colorado No. 37	2	79.2 "
170	Perm	2	78.0 "
---	Sixty Day 4 P 2	2	74.2 "
134	Swedish Select	1	69.4 "
738	Lincoln	1	67.8 "
300	White Tartarian	1	65.0 "

Rate-of-seeding test of Kherson Oats.

Pecks per acre	2	3	4	5	6
Yield in bushels per acre	85.0	86.9	87.5	90.0	90.6

NORTH DAKOTA:

Williston Substation. Jan. 31. The month of January is said to have been the coldest since 1897, with the greatest quantity of snow on the ground. In the winter of 1906-07 the snow was unusually heavy in the vicinity of Dickinson and much stock was lost, but old settlers believe that this winter is much more severe.

Mr. Babcock assisted the Director of Extension Work in North Dakota by giving talks on cereal culture at Squires and Bonetrail, in Williams County, on the 17th and 18th of January. Meetings scheduled for February 2, 3, and 4 at other points in Williams County probably will be canceled, due to the unusually deep snow which has made the roads practically impassable. A short course for farmers is to be held at Williston from February 8 to 11, and Mr. Babcock will lecture on cereal production.

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OFFICE NOTES.

Department Bulletin No. 336, entitled "Cereal Experiments in Maryland and Virginia," by Mr. T. R. Stanton, scientific assistant in oat investigations, was issued on February 10, 1916.

Mr. R. R. Childs, scientific assistant in the cooperative cereal investigations at the Georgia State College of Agriculture, has sent in completed first draft of his report on the results of the past year.

In the February 4 issue of The Cereal Review a correction should be made in the first item under Office Notes. For "The Dickinson Substation, Dickinson, N. Dak., " read "The Williston Substation, Williston, N. Dak."

Messrs. L. C. Aicher, L. R. Breithaupt, and D. E. Stephens left Washington on February 15 for their respective stations, namely, Aberdeen, Idaho; Burns, Oreg., and Moro, Oreg.

Mr. Chas. W. Hungerford, scientific assistant in cereal disease investigations, arrived in Washington on February 7 from Madison, Wis., where he has been engaged in cooperative work with the Wisconsin Agricultural Experiment Station.

The following were visitors at the Office during the week of February 7: Prof. Alfred Atkinson, Agronomist, Montana Agricultural Experiment Station; Prof. Thomas P. Cooper, Director, North Dakota Agricultural Experiment Station; Prof. J. R. Fain, Agronomist, Georgia State College of Agriculture; and Mr. David Chidlow, Specialist in the Chemical Technology of Wheat, Flour and Breadmaking, of Ridgefield, Conn.

Each field man who intends to use zinc-tape labels in the spring will please send in at once an estimate of the quantity of tape he expects to use, giving the exact width required, so that a sufficient stock may be ordered. It sometimes happens that quite a little delay occurs in filling requisitions, and it is the desire of the Office to be well supplied with the tape when requests are received from the field.

Seminar Notes.

Mr. O. E. Baker, of the Office of Farm Management, talked on the 8th instant before the seminar of the Office of Cereal Investigations. He showed the methods employed by his office in determining dates of seedtime and harvest, these being taken from reports sent in by cooperators of the Bureau of Crop Estimates. He showed maps prepared or in course of preparation on several of the cereals.

On February 11 Dr. Humphrey explained the new cereal disease notebook and showed specimens of the different cereal diseases, the object being to familiarize the members of the Office with the use of the notebook and with the diseases as they appear on the various crops.

Mr. J. S. Cole, of the Office of Dry-Land Agriculture, addressed the Office seminar on February 15 on the general features of the work of that office, discussing particularly the objects and scope of the rotation work. Some of the results so far obtained were briefly outlined.

FIELD NOTES.

NORTH DAKOTA:

Dickinson Substation. Feb 10. The mean temperature during the month of January was -3.6 degrees as compared with a 24-year normal of 10.2 degrees for that month. With the exception of January, 1907, (mean temperature -3.9 degrees) the past month was the coldest at this place in 24 years. A considerable quantity of wheat is being marketed when the weather and condition of the roads permit hauling.

Mr. L. R. Waldron, superintendent of the Dickinson Substation since its establishment in 1905, has recently accepted the position of plant breeder at the North Dakota Experiment Station. His new work will begin March 1. Mr. John C. Thysell, of the Office of Dry-Land Agriculture, has been appointed to succeed Mr. Waldron as superintendent of the substation.

Williston Substation. Feb. 5. The U. S. Weather Bureau station at Williston reports that the month of January was the coldest on record. The mean temperature was -9 degrees F. as compared with a normal of 6.5 degrees. The highest temperature was 33 degrees (January 23) and the lowest -42 degrees (January 12). The snowfall for the month was 11.2 inches, with 14 inches of snow on the ground at the close of the month. The precipitation was 1.17 inches more than for any January since 1896.

The great quantity of snow has made the roads practically impassable for hauling loads. Since January 1 very little wheat has been hauled by the farmers. Many of the farmers who live 20 to 50 miles from the railroad still have large quantities (1,000 to 6,000 bushels) to market. Owing to the deep snow it has been difficult for livestock to obtain feed, and because of the lack of shelter and insufficient roughage many animals are being lost.

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OFFICE NOTES.

Galley proof of Department Bulletin No. 357, entitled "Two Much-Misrepresented Wheats: Alaska and Stoner, or 'Miracle,'" was read on February 24.

Messrs. Morrison and Sieglinger left Washington on the 1st instant for their respective headquarters at Highmore, S. Dak., and Woodward, Okla.

Messrs. Babcock and Smith have been temporarily detailed to the Department of Chemistry of the North Dakota Agricultural Experiment Station at Fargo. They will assist Dr. Ladd and Mr. Thomas in the work of milling about 100 samples of wheat. These samples represent the 11 varieties grown in the uniform varietal tests at eight stations in the Great Plains area. A few samples in addition to the uniform varieties are included in the total number. Heretofore the wheats in the uniform varietal tests have been milled at several different laboratories. It is believed that the results will be more strictly comparable if the milling and baking of the varieties from all stations is done in a single laboratory. It will require probably about 4 weeks for Messrs. Babcock and Smith to complete this work.

Mr. Carleton attended a conference of flaxseed consumers and experiment station men at Minneapolis on February 21, for the purpose of devising means for increasing the quantity and quality of flaxseed produced in the United States. On February 22 he visited Madison, Wisconsin, where he discussed cooperative cereal disease investigations with Prof. L. R. Jones.

On Thursday, March 2, a number of the members of the Office inspected the Corby Brothers' bakery in this city, where they were shown all the processes of bread making, including the blending of the flour, the mixing of the dough, the formation of the loaves, and the final baking of the bread, buns, cake, etc., with all the special apparatus used in these operations. The general differences between different types of bread, - Mother's, Pullman, Vienna, French, rye, etc.,- were explained, as well as other interesting phases of the work of this large plant.

FIELD NOTES.

GEORGIA:

State College of Agriculture (Athens) Feb. 20. All varieties of wheat showed some leaf rust in January. None was observed on oats, barley, and rye. The rainfall for the month of January was 2.65 inches, which fell during 12 days well distributed throughout the month. The mean temperature was 48.4 degrees, or 6.4 degrees above normal. Owing to the warm, moist conditions plant growth was rank and some of the varieties of grain were slightly damaged by the cold weather early in February.

TEXAS:

Amarillo Cereal Field Station. Feb. 26. The winter has been dry with practically no precipitation since early in October. The average wind velocity has been less than usual, however, so that evaporation has not been excessive. There appears to be plenty of moisture in the subsoil, but the surface is dry and winter grains are in need of moisture. Plowing has been in progress since February 15. The minimum temperature so far in the month of February is 5 degrees (Feb. 1 and 2); maximum, 80 degrees (February 12).

Mr. A. B. Cron, of the Office of Forage Crop Investigations, returned from Washington on February 25.

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OFFICE NOTES.

Mr. Florell left on March 8 for his headquarters at Archer, Wyo. Mr. Stoa returned to Agricultural College, N. Dak., on the 10th instant to resume his work in cooperative flax investigations. Messrs. Donaldson and McMurdo left Washington on March 16 for their respective headquarters at Moccasin, Mont., and Akron, Colo.

Mr. Chambliss left on March 10 for a two months' trip through the rice growing sections of the southern United States.

Mr. Jenkin W. Jones, who left for his headquarters at Nephi, Utah, on March 12, writes from Manhattan, Kans., where he stopped en route, that winter wheat in the vicinity looks well, apparently little winterkilling having occurred. Some farmers have begun field operations. On the college farm winter wheat in field plats and nursery is in excellent condition.

Prof. E. G. Montgomery, of the College of Agriculture of Cornell University, is in Washington during part of his annual leave making special agronomic studies at the Department of Agriculture and conferring with various men in the Bureau of Plant Industry and other divisions.

Mr. John C. Brinsmade Jr., student assistant, was transferred to this Office from Bionomic Investigations, Bureau of Plant Industry, on March 1 to assist in the flax investigations at Mandan, N. Dak. Mr. Brinsmade will leave for his field station about May 1.

A manuscript entitled "Seed-Flax Production," by Mr. Chas. H. Clark, was transmitted to the Chief of the Bureau on March 7 for publication as a Farmers' Bulletin.

First page proof of Dept. Bulletin No. 357, entitled "Two Much Misrepresented Wheats: Alaska and Stoner or 'Miracle,'" was read during the week of March 13.

Attention is called to the issuance of Memorandum for Members of Office of Cereal Investigations, dated March 9, with reference to precautions necessary in the shipment of varieties of cereals from the western United States to the eastern United States and to foreign countries because of the newly discovered disease known as Puccinia glumarum. This memorandum, copies of which have been sent to all field men, should be carefully read.

The Office of Information has issued a brief article on Polish wheat, prepared in the Office of Cereal Investigations. The Department has recently been informed that this wheat is being offered for sale in Montana at the exorbitant price of $1.00 per pound. Polish wheat was exploited several years ago in Idaho under the name "corn wheat," and elsewhere since that time as "Jerusalem rye," "Giant rye," etc. It has never been grown commercially in the United States and is not recommended for any part of this country.

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March 31, 1916.

OFFICE NOTES.

Beginning with this issue the Cereal Review will appear weekly until further notice.

Attention is again called to the necessity for mailing stubs of requests exchanged for transportation immediately after such requests are used. They should be sent at once to this Office for entry of numbers by the financial clerk, who will immediately transmit them to the Office of Records. These stubs are necessary for checking the bills of transportation companies and should be on hand here before these bills are received. Several letters asking for missing stubs have recently been received from the Office of Records, because those who used requests delayed forwarding the stubs to this Office, and as a consequence the bills of the transportation companies must be held until the stubs can be obtained.

Mr. F. J. Schneiderhan left Washington on March 29 for Moro, Oreg., where he will assist Mr. Stephens, superintendent of the Eastern Oregon Dry Farming Substation, in the investigations with cereals. He will give particular attention to the nursery work with small grains, making observations on comparisons of varieties, their hardiness, resistance to disease, earliness, and other qualities. He will also do some work in crossing and selection.

The following manuscripts have been transmitted to the Chief of the Bureau for publication:

"Cereal Crops in the Panhandle of Texas," by Mr. John F. Ross. Farmers' Bulletin.

"Marquis Wheat," by Messrs. Carleton R. Ball and J. Allen Clark. Farmers' Bulletin.

"Grains for the Montana Dry Lands," by Mr. N. C. Donaldson. Farmers' Bulletin.

The following interesting note on the wheat and oat crops in New Zealand, by Consul General Alfred A. Winslow, Auckland, is taken from the Commerce Reports issue of March 20, 1916:

"The latest estimate given out by the Department of Agriculture covering the wheat and oat crop for the season 1915-16 puts the wheat production at 7,309,020 bushels, against 6,644,336 bushels for 1914-15, with oats at 12,722,733 bushels for 1915-16, against 11,436,301 for 1914-15. This will give about 2,000,000 bushels of wheat and 2,500,000 bushels of oats for export."

The following warning against weather forecasting fallacies by the Chief of the Weather Bureau is given in full for the benefit of field men:

March 24, 1916.

"WARNING AGAINST WEATHER FORECASTING FALLACIES.

Throughout its history the Weather Bureau has been called upon from time to time to caution the general public against the too credulous belief in alleged new systems for forecasting the weather for weeks or months in advance, or

in schemes for the artificial production of rain, the prevention of hail, and other proposals to control or modify atmospheric phenomena or to forecast them a long time in advance. Pretensions of this character meet with a certain credence because there are a number of people who still cling to the ancient belief in the influence of the moon on the growth and development of crops, and to the idea that the weather conditions depend upon planetary and astrological combinations. As a rule the general public is only partly familiar with modern scientific facts and seems overready to accept confidently at face value almost any announcement of alleged new discoveries, especially when their exploitation is clothed in skilful allusions to items of the latest scientific information and is accompanied by clever representations of the benefits that are to result.

The latest misrepresentation of this character now being presented to the people of the country in the columns of the daily press is an alleged new system of long-range weather forecasting said to be based on the rifts and spottedness of the sun and its shafts of solar radiation.

When the disk of the sun is minutely examined with powerful telescopes, or when photographed with the aid of the modern spectroheliograph, the surface presents a characteristic spotted appearance which undergoes slight changes from day to day, and greater changes with longer intervals of time, depending upon the well-known rotation of the sun upon its axis and the periodic recurrence of the sunspot maxima and minima. These and certain well-known related phenomena are represented to be the basis of the so-called discovery.

During the past several years the Weather Bureau has received, in the form of letters, circulars, diagrams, and blue prints, full specifications concerning all essential details of this alleged new system of forecasting. The so-called discovery is fully known to the Weather Bureau and has received fair and impartial study and examination by its scientific staff. Moreover, other scientists of international reputation now connected with the strongest institutions in the world engaged in astronomical research and conducting investigations in solar and terrestrial physics have also passed upon these new theories. These authorities are in accord that the deductions and conclusions drawn from the solar conditions on which the new system is based are unwarranted. Solar phenomena of the kind described do not

have any direct influence upon the weather at any particular time and place, and therefore can not be made the basis of weather forecasting.

Specious references to the moon, to the planets, and to the spottedness of the sun and its shafts of radiation alleged to dominate terrestrial weather are but picturesque frameworks upon which to display weather forecasts for sale.

The United States Weather Bureau is the authorized agency of the Government to collect meteorological observations and to make and issue weather forecasts and warnings, and every important nation of the world has a similar organization. All are using essentially the same methods, all are alert to utilize the real developments of science and to improve and perfect methods and results, and all condemn and disapprove the methods and theories of the long-rangers.

The Weather Bureau is endeavoring to render a useful service to the agriculture, commerce, and navigation of the country, and the Chief of the Bureau is prompted to state openly and emphatically the views of the bureau on the questions presented in the foregoing, because the general public is entitled to know that the Government officials pronounce this new scheme fallacious, and place it in the same class with other methods of long-range forecasting based on lunar, planetary, magnetic, and astrological considerations.

C. F. Marvin.

Chief of Bureau."

FIELD NOTES.

TEXAS:

Amarillo Cereal Field Station. March 18. The weather for the first half of March was blustering, although quite warm most of the time. There has been no precipitation so far this month and the ground is very dry. Winter grains are making very slow growth and some are much in need of moisture. The spring-sown grains have not yet sprouted.

SOUTH DAKOTA:

Bellefourche Experiment Farm. (Newell) March 21. Mr. Martin returned to his headquarters on March 20, having been detailed last December to do special work in cereal investigations at the South Dakota experiment station, Brookings, S. Dak.

Field work was begun a week ago. Alfalfa and winter wheat have just started growth; early-sown winter wheat seems to be somewhat injured by the cold weather during the winter. Some damage due to soil blowing was also noted.

March 27. Winter grains have made no growth because of the cold weather. About 3¼ acres of a local variety of oats similar to Swedish Select and of White Russian oats were sown for increase under irrigation. Maximum temperature for the past week, 70 degrees; minimum, 10 degrees; precipitation, 0.38 inch.

Considerable field work has been done in the vicinity of Newell.

Highmore Substation. March 2. The first sowings were made on March 16 in the date-of-seeding test.

Some grain has been sown on the farms in the western part of the State. Winter grain over the entire State has come through the winter in excellent condition. The weather has not been severe since the melting of the snow during the early part of March.

On March 22 a meeting of the South Dakota Experimental Association was held at Brookings, which was attended by about 150 members and others interested in grain growing. Much interest was manifested in the leading cereals adapted to South Dakota.

CALIFORNIA:

Biggs Rice Field Station. March 14. After ten days of drying weather it will be possible soon to begin field work, and rice seeding will be done as soon as weather conditions permit.

Plant Introduction Garden. (Chico) March 14. During the past few days work has been done in cleaning the cereal nursery and plats. The ground, which was weedy and badly packed, was loosened as much as possible. The stands on the plats are good, but a part of the nursery seedings did not germinate well because heavy, cold rains immediately after seeding packed the ground and caused some of the seed to rot. At present, the lack of uniformity of the soil on the plats is very marked.

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OFFICE NOTES.

In view of the decision of the Comptroller of the Treasury with reference to items of joint expenditure, considerable delay in payment of reimbursement accounts may be avoided by stating on each account whether the traveler was or was not accompanied by any person whose travel was not covered by Government authorization.

FIELD NOTES.

VIRGINIA:

Arlington Experiment Farm. April 7. Cereal crops survived the winter with apparently slight injury and are now in a vigorous condition. The fall-sown grains are not so far advanced as normally, because of the late, cold spring. The soil has dried sufficiently to permit field operations. During the past week the weather has been quite favorable though rather windy. Maximum temperature, 72 degrees (April 1); minimum, 38 degrees (April 5); precipitation, 0.12 inch (April 3).

TEXAS:

Amarillo Cereal Field Station. April 1. The weather continues dry. A snow on March 31 amounted to a precipitation of about 0.10 inch. Spring seeding is not yet completed. Grain sown some time ago has not germinated.

KANSAS:

Hays Branch Experiment Station. April 4. A 60-mile trip was made over the eastern part of the county yesterday for a Hessian fly survey. Eggs were found in every field that was examined, including wheat on fallow and on corn land. Pupae, empty shells, and adults were found wherever there was volunteer wheat. Wheat, however, is in fair condition.

COLORADO:

Akron Field Station. March 31. Since October, 1915, the precipitation has been light. The weather during March has been cold and windy. Seeding of spring wheat, oats, barley, and emmer in field plats is nearly finished. Winter grains on the station and in the vicinity are in good condition, but need moisture.

WYOMING:

Cheyenne Experiment Farm. (Archer) March 31. The winter has been moderately cold, with a light snowfall. The latter part of the winter was dry, with much wind. The soil still contains considerable moisture. Winter wheat and winter rye winterkilled only slightly. These crops were sown on fallow and were almost completely cut off by the blowing of soil and gravel during the wind storm of March 21. With favorable weather conditions during the spring most of it probably will recover.

Corn ground has been double-disked for the cereal work for the year.

A large field of winter wheat near the experiment farm, which was seeded in disked wheat stubble, is looking exceptionally good. This field was not injured by wind storms.

NORTH DAKOTA:

Dickinson Substation. April 3. During the past few weeks the weather has been very changeable. A blizzard on March 29 and 30 supplied 0.72 inch of precipitation, which was more than had fallen previously during the winter. The precipitation for the month of March was 1.17 inches; mean temperature for the month was about normal.

With continued thawing weather, work in the field is expected to begin the first of next week. In the eastern and northern parts of the State, where the winter precipitation was greater, the beginning of field work will be somewhat delayed.

Williston Substation. April 1. The spring season is backward for this part of the State. The snow has melted on some of the fields, but it will be several days before they can be worked. Large quantities of snow still remain in drifts, and the roads are practically impassable on account of snow and mud. The Missouri River is very high and is flooding the lowlands. The ice in the river has broken only at certain points and owing to its unusual thickness many jams are occurring.

WASHINGTON:

Adams Branch Experiment Station. (Lind) March 20. The season is unusually late this year and consequently all operations will be delayed. Seeding has only just begun. No plowing has yet been done on the station, but contracts have been made for this year and probably will be completed about April 5. Practically the whole central Washington area must be sown to spring grains this year.

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FIELD NOTES.

OKLAHOMA:

Woodward Field Station. April 11. The weather has been very changeable so far this month. There has been some precipitation, and the soil is in good condition with regard to moisture.

SOUTH DAKOTA:

Highmore Substation. April 10. With the first few days of spring the work of seeding grains has begun and is progressing rapidly. Farmers are starting spring field work. Encouraged by the high yields obtained last year, farmers will increase their acreage. Prospects for another good crop are excellent.

NORTH DAKOTA:

Dickinson Substation. April 8. Mr. Smith returned from Fargo on April 1, having completed his part of the milling and baking tests mentioned in the "Cereal Review" of March 3.

The weather during the past week has been cold, with much wind and frequent snow squalls. The snow is nearly melted, but no field work has been done and probably nothing can be done before the middle of next week. Because comparatively little plowing was done last fall the wheat acreage this year will be somewhat reduced. In Stark County some stacks of last year's grain still remain unthrashed.

Williston Substation. April 8. The weather during the past week has continued cold. Considerable snow is left in drifts throughout this part of the State.and roads are still almost impassable. No field work has been started and it probably will be the last of next week before the fields on the Substation are in condition to work. It will be a longer period before the fields outside of the Williston Valley are ready to work. There has been frost every night during the week. Maximum temperature, 47 degrees; minimum, 12 degrees. No precipitation.

MONTANA:

Judith Basin Substation. (Moccasin) April 3. Field work was started two weeks ago. Some plowing was done and 12 acres were seeded to Sixty Day oats. With a precipitation of 1.30 inches during the past week, mostly in the form of snow, it is doubtful if field work can be resumed this week. At the present time the prospects for a winter-wheat crop are very poor. While it is too early to be sure that the wheat is entirely killed, yet indications are that much of it has been destroyed. The alternate thawing and freezing of the past two months probably has caused the injury. There have been several warm spells during the past two months, followed by cold weather. In one case the temperature dropped from 50 degrees above to twenty-five degrees below in a few hours.

Reports from other parts of the Judith Basin indicate that there has been considerable winterkilling of winter wheat, the greatest injury appearing on wheat seeded early on fallow ground. Late seeded wheat and wheat seeded on stubble does not seem to have been injured as much. There has been considerable winterkilling in other sections of the State. In the Salesville district of the Gallatin Valley it is estimated that half of the fall wheat has been winterkilled. One of the milling companies at Bozeman reports that it has sold a carload of Marquis spring wheat for reseeding and expects to sell three more. It is estimated

by grain dealers and elevator men that the acreage of winter wheat in Montana is only about 50 per cent that of last year's. Because of the small acreage of winter wheat and the winterkilling of that which was sown, a large acreage will be sown to spring wheat. There is great demand for Marquis wheat.

Cut worms are reported as doing considerable damage in some parts of the Basin and they are expected to appear in other parts of the State. The experiment station at Bozeman has issued warnings to farmers to watch for the worms and is recommending the use of poisoned bran mash.

April 9. During the first part of the week field work was impossible because of the continued cold and stormy weather. During the last few days the fallow ground has been harrowed and put in shape for seeding.

Winter wheat at the substation does not show much sign of life. Growth has begun in a few places on the acre plats, but on the smaller plats and in the 20-acre increase field of Kharkov, C. I. No. 1583, which were seeded later than the acre plats, growth has not yet started.

The County Agriculturist estimates that 75 per cent of the winter wheat on fallow ground in Fergus County is winterkilled. Wheat on stubble ground or on ground that was rough and held the snow came through the winter in good condition. Wheat that was sown on stubble ground from which the stubble was burned before seeding is as badly winterkilled as the wheat on fallow. It is thought that all the wheat was alive early this spring when the first warm spell came. The wheat that was on fallow ground or on ground that did not hold the snow started growth and when the cold weather came was killed. The wheat seeded in stubble or on ground that held the snow did not start growth as soon and so escaped.

In the Denton district north of Moccasin, where the season is a couple of weeks earlier than at Moccasin, most of the farmers have reseeded to spring wheat. Marquis is the variety that most of the farmers are sowing. It is easier to obtain pure seed of this variety than of any of the durum wheats. In

many cases the winter wheat is not all killed and it is thought that the Marquis will be less objectionable than the durums in a mixture with it.

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April 21, 1916.

OFFICE NOTES.

Messrs. Chas. H. Clark and J. C. Brinsmade, Jr. left Washington on April 20 for Mandan, N. Dak., where they will be engaged in the work of seeding flax selections on the Northern Great Plains Field Station. Mr. Clark will proceed to points in the West and Southwest in the interests of flax investigations and will return to Washington the latter part of June. Mr. Brinsmade will look after the flax work at Mandan during the summer.

FIELD NOTES.

VIRGINIA:

Arlington Experiment Farm. April 20. The work of removing weeds from the nursery and field plats by hoeing and spraying was begun during the past week. Cereal crops are in a vigorous condition and making good growth. The weather so far in April has been quite favorable to the development of fall-sown crops. Maximum temperature for the week, 78 degrees (April 14); minimum, 31 degrees (April 11); precipitation, 1.33 inches. The precipitation for March was 2.53 inches.

GEORGIA:

State College of Agriculture. (Athens) April 15. All varieties of barley are headed, as are some of the earlier varieties of wheat and oats. Rustproof oats are just beginning to head. All varieties of grain are heading from two to three weeks earlier than last spring. Precipitation for March, 2.02 inches. Rust of wheat is very prevalent, particularly on the earlier varieties.

COLORADO:

Akron Field Station. April 15. A slight precipitation has benefited the growing grain, but more is needed. Spring grain seeded on field plats has not yet emerged.

SOUTH DAKOTA:

Bellefourche Experiment Farm. (Newell) April 17. Snow and cold weather during the latter part of March and the first part of April did not permit much field work. On the Farm nearly all the grain has been sown. On the irrigated land experiments with spring-sown cereals include the varietal tests of wheat, oats, and barley, the cultural tests, and the tests of grain mixtures. On the dry land, the seeding of spring oat and barley varieties and the rate-of-seeding tests of wheat and oats has been completed. The earlier plats in the date-of-seeding tests with wheat and flax have also been sown.

Over 500 bushels of the best varieties of grain have been distributed by the Office of Western Irrigation Agriculture among the farmers in lots of 1 to 5 bushels. Reports of the results will be requested.

During the past ten days considerable farm work has been done in the vicinity of the Farm and much of the seeding is finished.

Highmore Substation. April 15. The weather of the past week has been excellent for field work and seeding has progressed rapidly. Sowings for the third date in the date-of-seeding tests were made today. Barley, wheat, and emmer seeded on April 5 are emerging with excellent stands. Winter grain has a fine appearance and survivals are excellent.

NORTH DAKOTA:

Dickinson Substation. April 17. Cool, changeable weather prevailed during the past week, with only a trace of precipitation. The varietal wheat nursery was seeded on April 14 and 15. The ground for the varietal plats is still too wet to be worked on account of the large amount of snow held during the winter in the corn stubble.

Field work in the vicinity of the substation was begun on April 14.

Williston Substation. April 15. The weather of the past week has been cool, but, as there has been little precipitation, the soil has dried considerably. Snow drifts can still be seen on the hills and it will be several days yet before farmers outside of the Williston Valley can get into their fields. Because little plowing was done last fall, seeding will be generally late.

Field work on the substation has been in progress for the past three days. The ground for the small grains has been disked and harrowed three times and is now ready for seeding. The ground is in excellent condition. Maximum temperature for the past week, 77 degrees; minimum, 32 degrees; precipitation, 0.05 inch.

MONTANA:

Judith Basin Substation. (Moccasin) April 17. During the past week there was a precipitation of 0.82 inch. Varietal and nursery plat tests of spring wheat, oats, and barley and part of the flax varieties have been seeded. Flax seeding will be finished in another day.

Most of the farmers in the Judith Basin are busy reseeding their winter wheat. The weather of the past week has been favorable for the growth of winter wheat. The starting of spring growth emphasizes the fact that about the only live winter wheat is that which was seeded in stubble. Farmers report that they are now paying $1.50 per bushel for Marquis wheat.

The western wheat aphis is not much in evidence this spring. This may be due to the fact that there is so little wheat in this section. This aphis was first found in the Judith Basin in 1910 and since that time has increased in numbers. In 1914 and 1915 it was estimated that, next to cut worms, it was the most destructive insect pest attacking winter wheat. It also works on spring wheat and barley, but does not seem to injure oats and flax. The aphis has

migrated from some of the winterkilled portions of the wheat fields to the native blue joint, where it probably will live until the fields are reseeded.

Maximum temperature for the week, 77 degrees; minimum, 32 degrees; precipitation, 0.05 inch.

UTAH:

Nephi Substation. April 16. For the past two weeks the weather has been rather cold and crop growth has been slow. The stands of the winter cereals are very poor. This seems to be due to the fact that the fall was so dry that the grain, after germinating, was unable to emerge. Any number of plants can be found curled just beneath a slight surface crust. It is probable that the seed was sown too deep for the climatic conditions that prevailed last fall, although seeding was done at the usual depth. When these plants are exposed they wither and die.

Winter oats, barley, emmer, and spelt in all tests show extremely poor stands. In the winter-wheat varieties stands range from 0 to about 75 per cent of a normal stand. In the rotation experiments winter oats and barley will have to be reseeded; this probably also will have to be done in the case of other plats of these grains on which the stands do not justify leaving the crops to mature. Stands are fairly good on the winter nursery, with the exception of Boswell oats. The large field seeded to Turkey wheat has a fair stand.

Most of the farmers on the Levan Ridge probably will have fairly good stands, although in some cases the plants are crusted under like those on the substation. Little reseeding will be necessary, however. Farmers who seeded early in September or very late in the fall have good stands, but seedings at intermediate dates are more patchy.

The field peas in the rotation experiments were seeded April 8. The spring oats and barley varieties were sown on April 11.

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April 28, 1916.

OFFICE NOTES.

Mr. Carleton left Washington on April 25 to visit points in Florida, Georgia, Tennessee, and North Carolina in the interests of cereal investigations.

Department Bulletin No. 357, entitled "Alaska and Stoner, or 'Miracle,' Wheats: Two Varieties Much Misrepresented," by Carleton R. Ball and Clyde E Leighty, was issued April 27.

Galley proof of Farmers' Bulletin 732, entitled "Marquis Wheat," by Messrs. Carleton R. Ball and J. Allen Clark, is being read.

All field men now having unused Government Bills of Lading in their possession should return them immediately to this office. A new form has just been printed to take the place of those issued heretofore, and it is desired that none of the old forms be used hereafter. A supply of the new bills of lading will be mailed promptly upon receipt of request therefor.

From the supplement of Commerce Reports, dated March 24, 1916, is taken the following summary of the yield and value of field crops in 1915, issued by the Census and Statistics Office of the Dominion of Canada:

"As a result of the returns of the average yields per acre, made after thrashing, the total yields of the grain crops in bushels for the 1915 season compared with 1914 are as follows: Wheat, 376,303,000 against 161,280,000 in 1914; oats, 520,103,000 against 313,078,000; barley, 53,331,300 against 36,201,000; rye, 2,394,100 against 2,016,800; peas, 3,478,850 against 3,362,500; beans, 723,400 against 797,500; buckwheat, 7,865,900 against 8,626,000; flaxseed, 10,628,000 against 7,175,200; mixed grains, 17,523,100 against 16,382,500; and corn for husking, 14,368,000 against 13,924,000. The average yields per acre in 1915 were, in bushels, as follows, the figures placed in parentheses representing the yields of 1914 for comparison: Fall wheat, 29.41 (21.41); spring wheat, 28.93 (15.07); all wheat, 28.98 (15.67); oats, 45.76 (31.12); barley, 35.33 (24.21); rye, 21.31 (18.12); peas, 17.73 (17.64); beans, 16.70 (18.20); buckwheat, 22.88 (24.34); flaxseed, 13.18 (6.62); mixed grains, 37.54 (35.46); and corn for husking, 56.72 (54.39).

In the three northwest Provinces of Manitoba, Saskatchewan, and Alberta, the production of wheat in 1915 is estimated at 342,948,000 bushels, as compared with 140,958,000 bushels in 1914; oats, 334,840,600 bushels, compared with 150,843,000; barley, 35,317,200 bushels, compared with 19,535,000 bushels; and flax, 10,559,000 bushels, compared with 7,083,000 bushels."

The following is an extract from Commerce Reports of April 20, 1916, concerning Argentine crop conditions:

"The acreage under cultivation and the estimated production of the principal grains in Argentina for the agricultural year 1915-16 as compared with that for 1914-15 were:

Grains	1914-15		1915-16	
	Acres	Tons	Acres	Tons
Wheat	15,470,200	4,585,000	16,420,085	5,012,000
Oats	2,868,875	831,000	2,564,830	1,095,000
Linseed	4,257,600	1,125,000	4,000,615	1,023,000
Barley	395,365	250,000	431,195	250,000
Rye	228,820		211,520	

FIELD NOTES

VIRGINIA:

Arlington Experiment Farm. April 27. The work of removing weeds from the nursery has been continued during the past week. The spraying of winter oats and winter barley with a solution of sodium arsenite (4 pounds of sodium arsenite and 25 gallons of water) has been effective in killing weeds. The only injury to the grain plants is a slight burning of the leaves.

Fall-sown barley and rye have begun to head. The weather of the past week was for the most part cold, windy and stormy. Maximum temperature, 86 degrees April 21); minimum, 40 degrees (April 26); precipitation, 1.74 inches.

TEXAS:

Amarillo Cereal Field Station. April 22. The drought was broken on April 14 by a precipitation of 1.30 inches. A shower on the 19th instant amounted to 0.12 inch. The soil is in fine condition and the spring-sown grains are coming up well. The fall-sown grains are making some growth, although somewhat injured by the drought. Maximum temperature for the past two weeks, 88 degrees (April 11); minimum, 25 degrees (April 9).

COLORADO:

Akron Field Station. April 24. In spite of the dry weather spring-sown grain is making a fairly good stand on fallow land. The seeding of the spring nursery is progressing as rapidly as the wind will permit. Flax was sown early last week. During the past eight months the precipitation has been only 4.67 inches.

WYOMING:

Cheyenne Experiment Farm. April 21. Weather conditions are favorable for spring seeding. The precipitation has been slight but there is still considerable moisture in the surface soil. Varieties of oats, barley, common spring wheats, and peas have been seeded in the field plats.

Much of the winter wheat is now dead as a result of high winds and blowing of the soil. The leaves of many of the wheat plants were cut off by moving soil, while the crowns were exposed. Probably it will be necessary to reseed at least a part of this land to some spring crop. Maximum temperature for the week, 65 degrees; minimum, 26 degrees; average maximum, 54 degrees; average minimum, 31 degrees; average mean, 43 degrees. Average wind velocity for the week, 10.8 miles per hour; from 8 A. M. to 5 P. M., April 25, 28.5 miles per hour.

SOUTH DAKOTA:

Bellefourche Experiment Farm. (Newell) April 24. Early seeded grain has emerged. Fall-sown grain has been making very slow growth and shows some evidence of

winterkilling. Soil blowing has also damaged it to some extent. The spring-wheat varieties and the rate-of-seeding test with flax were sown on the dry land during the week. In addition, all of the nursery has been sown, with the exception of the flax and a part of the wheat classification nursery. Maximum temperature, 68 degrees; minimum, 23 degrees; precipitation, 0.46 inch.

Highmore Substation. April 22. Field work was stopped by rains on April 19 and 20. All cereals have been seeded with the exception of rod rows and head rows in the nursery.

About 90 per cent of the spring seeding is done throughout the country. Fall-sown grains and early seeded spring grains are making rapid growth.

NORTH DAKOTA:

Dickinson Substation. April 22. Field work has been stopped because of a heavy rain and snow storm on April 18, 19, and 20, with a total precipitation of 2.69 inches. Part of the snow still remains on the ground. Maximum temperature for the week, 65 degrees (April 17); minimum, 17 degrees (April 21). Seeding has been done only in the wheat nursery. Winter wheat on fallow was badly winterkilled, having little snow to protect it during the winter. That seeded in standing corn looks fairly good. North Dakota No. 959 rye (C. I. No. 175) came through the winter in good condition, while the von Rumker rye (C. I. No. 173 and 174) was somewhat injured by winterkilling.

Note: It is desired to call attention to an error in the issue of April 7. The sentence,"A blizzard on March 29 and 30 supplied 0.72 inch of precipitation, which was more than had fallen previously during the winter," should read as follows: "A blizzard on March 29 and 30 supplied 0.72 inch of precipitation, which was more than had fallen during any previous storm of the winter."

Agricultural College. (Fargo) April 25. Little spring work has yet been done. The weather is still cool and it is raining quite frequently.

Northern Great Plains Field Station. (Mandan) April 25. Mr. Clark and Mr. Brinsmade arrived on April 24 and report that the work of seeding wheat on the rotation plats is in progress. Much of the land has not yet been prepared for seeding because of the late spring. From train observations it is evident that spring work in Minnesota and eastern North Dakota is late because of the backward season. Many expect an increase in the flax acreage on that account.

Williston Substation. April 22. The first plats in the date-of-seeding tests with wheat, oats, barley, and flax were sown on April 15. Varieties of wheat and oats were seeded in fortieth-acre duplicate field plats on April 18, and the varieties of barley and emmer were sown on the 22d. The rate-of-seeding tests with wheat, oats, and barley in field plats have also been sown.

Very few of the farmers in the vicinity have been able to get into their fields as yet.

Maximum temperature for the week, 66 degrees; minimum, 25 degrees; precipitation, 1.20 inches. Of this, 1.09 inches fell mostly in the form of snow on April 19.

MONTANA:

Judith Basin Substation. (Moccasin) April 24. The seeding of the varietal and nursery plats, including the spring-wheat classification nursery, was finished during the past week. Because of the cold weather germination has been slow and none of the varieties has emerged. The increase field of Sixty Day oats (C. I. No. 165) seeded on March 22 is just beginning to emerge. The 20-acre increase field of

Kharkov wheat (C. I. No. 1583) has been entirely winterkilled and will be reseeded to Sixty Day oats. On the acre plats there is less than 1 per cent of the wheat alive; the varieties in smaller plats, including the nursery and the environmental experiment, are entirely killed. This land will be left fallow and seeded again to winter wheat next fall. During the past week the weather has been cold and cloudy, with considerable wind and no precipitation.

A small tractor has been purchased for use on the substation. This will be employed in preparing the increase fields and for plowing the summer fallow. Formerly it was necessary to hire part of the plowing done. With the tractor it will be possible to do all the work with the substation force.

The Banking Corporation of Montana reports that an accurate survey shows that from 15 to 18 per cent of the winter wheat in the State has been winterkilled.

OREGON:

Eastern Oregon Dry-Farming Substation. (Moro) April 21. The winter in the vicinity of Moro was unusually severe and the snowfall heavy. Railroad service on the branch lines was suspended several times during the winter because of heavy snow; in the spring for a period of nearly two weeks no trains were running on account of the excessive runoff which washed away tracks and bridges. The runoff did some damage to experimental plats on the substation.

The spring is late and winter grains are not as far advanced as usual at this time of the year. Largely because of the failure of fall-sown grain to emerge considerable reseeding has been done. There has also been some winterkilling among the club and other soft-wheat varieties sown last fall. Bluestem, Little Club, and Dale Gloria wheats were almost entirely winterkilled. The Turkey wheats were not

injured by the cold weather. Winter barley, which was sown earlier and had made more growth in the fall, was not damaged.

All spring-sown grains, including the nursery, have been sown and nearly all varieties have emerged with good stands.

The precipitation since September 1, 1915, has been nearly 12 inches, about the normal rainfall for the entire year.

Mr. F. J. Schneiderhan arrived at the substation on April 7 to take charge of the cereal breeding work.

THE CEREAL REVIEW

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May 5, 1916.

OFFICE NOTES.

Mr. Potter left on April 30 to visit points in the North Central States in the interests of cereal disease investigations, particularly cereal smuts.

Dr. Humphrey left on May 1 for points in the South and West in the interests of cereal disease investigations. He will not return until some time in July.

Mr. Chambliss returned on May 1 from a trip in the rice-growing sections of the southern United States.

Page proof of Farmers' Bulletin 732, entitled "Marquis Wheat," was read on May 5.

The following manuscripts have been transmitted to the Chief of the Bureau for publication:

"Cereal Experiments on the Akron Field Station, Akron, Colo.," by George A. McMurdo. Department Bulletin. April 17.

"Cereal Experiments on the Judith Basin Substation, Moccasin, Mont.," by N. C. Donaldson. Department Bulletin. April 17.

"Experiments with Marquis Wheat," by Carleton R. Ball and J. Allen Clark. Department Bulletin. May 3.

"Culture of Rye in the Eastern Half of the United States," by Clyde E. Leighty. Farmers' Bulletin. May 3.

"Cereal Experiments on the Cheyenne Experiment Farm, Archer, Wyo.," by Jenkin W. Jones. Department Bulletin. May 5.

The Great Plains Cooperative Association will meet at Amarillo, Texas, August 22-24, 1916. Those who will have papers to present at this meeting should submit titles to the Office now so that the program can be prepared at the earliest possible date. The men engaged in cereal work in the Great Plains are urged to prepare papers for presentation at this meeting, even if they can not attend in person.

On May 3 Messrs. Ellison and Stanton visited the Maryland Agricultural Experiment Station at College Park. On the station farm winter wheat and barley are in excellent condition, but winter oats are badly winterkilled. In the trilocal soil-exchange experiment with Turkey winter wheat, about 75 per cent of the plants have survived the winter on the Kansas and California soils, respectively, while on the Maryland soil less than 25 per cent have survived.

Winter wheat is in good condition throughout the State and if the weather continues favorable an excellent crop will be harvested.

In the Supplement to Commerce Reports No. 23c, April 28, 1916, the following statements are made on the area of farm lands, the value of farms, etc., in the Provinces of Manitoba, Saskatchewan, and Alberta:

The estimated acreage of arable lands still available in the Provinces of Manitoba, Saskatchewan, and Alberta is placed at 272,892,000, of which 105,217,000 acres are in Alberta, 93,459,000 in Saskatchewan, and 74,216,000 in Manitoba. The last Dominion census shows the area of land occupied as farm lands in Manitoba as 12,228,233 acres; in Saskatchewan, 22,642,000 acres; and in Alberta, 17,751,988 acres, indicating that there is sufficient tillable land in the three Provinces to support an agricultural population of about 10,000,000.

Concerning elevator and warehouse capacity in Canada the following is stated:

A large amount of capital has been invested by the railroads in the elevators and warehouses for the storage of grain pending shipment. The greatest number of elevators are located on the line of the Canadian Pacific, the total storage capacity being 90,327,500 bushels; on the Canadian Northern, 42,497,500 bushels; Grand Trunk Pacific, 14,775,000 bushels; Manitoba Great Northern, 285,000 bushels; Brandon, Saskatchewan & Hudson Bay, 460,000 bushels, making an aggregate capacity of 148,345,000 bushels.

Winnipeg wheat receipts exceeded the combined receipts of Minneapolis and Chicago for the calendar year 1915 by over 2,000,000 bushels.

Dr. Humphrey writes from Knoxville, Tenn., where he visited the experiment station on May 3:

"I have had opportunity to inspect the various cereals now growing in the nursery on the station. All crops survived the winter with but slight loss, but owing to insufficient rainfall and, until very recently, the prolonged cool weather, the growth is not up to the average. Winter rye is in bloom; oats (early varieties) are in boot or heading. The green aphis is doing considerable damage to oats, especially those sown this spring. Wheat is about 14 inches high

and is in the boot. Barley presents the best appearance of all, but the hooded varieties indicate a loss in some cases amounting to 10 per cent, due to loose smut and the stripe disease fungus (Helminthosporium graminis). There is but little rust in any of the plats. Some of the rye varieties are affected but not seriously. I saw no stem rust (Puccinia graminis) anywhere, but, of course, it may yet occur.

The rust nursery is in better condition than I had anticipated finding it. Certain of the wheat varieties wintered poorly; others entirely winterkilled. Mr. Evans has thus far failed to secure an epidemic of stem rust, but is now more hopeful since I made some suggestions along the line of methods developed in our Kansas work."

FIELD NOTES.

KANSAS:

Hays Branch Experiment Station. April 29. The continued cool weather during the past week has been unfavorable for the growth of fall-sown wheat. Small grains sown April 10 and 11 have emerged with good stands. Corn planted April 18 in a date-of-seeding test has not yet emerged, nor have potatoes planted in March. No corn has been planted in the vicinity of the station.

There was an attendance of more than 600 at the meeting of cattlemen held at the station on April 20.

SOUTH DAKOTA:

Bellefourche Experiment Farm. May 1. Most of the spring-sown grain has not emerged. Both winter and spring-sown cereals are making slow growth because of the cold, dry weather. During the week the varietal plats of flax on both dry and irrigated land, the flax nursery, and a few miscellaneous plats of wheat were sown. Maximum temperature for the week, 73 degrees; minimum, 27 degrees; precipitation, 0.15 inch.

Highmore Substation. May 1. In spite of continued low temperatures and frequent heavy frosts the weather during the past week was fairly favorable for field work. The frosts have not injured the grain, which is in good condition. Most of the spring-sown grain is emerging and stands are excellent. Alfalfa is growing rapidly, as is also the native grass.

NORTH DAKOTA:

Dickinson Substation. May 1. During the past week wheat and oats were sown in the varietal and rotation plats. Barley will be seeded tomorrow. Wheat and oats have been sown in the nursery.

Field work in the vicinity of the substation was resumed early in the week, the fields having dried sufficiently after the rain and snow-storm of April 18-20. The abundant moisture will insure good germination. Maximum temperature for the week, 70 degrees; minimum, 26 degrees; precipitation, trace. Total precipitation for the month of April, 2.69 inches, all occurring April 18-20.

Williston Substation. April 29. Field work has been in progress continuously during the past week. The small grains are practically all sown, with the exception of the flax varieties and the later date-of-seeding tests. Seeding of the rotation plats and increase fields of wheat and oats is finished. The nursery rows of wheat and oats were also sown during the week. The weather has continued cold. None of the grains in the earliest sown plats (April 15) in the date-of-seeding test has yet emerged.

Winter wheat in field plats came through the winter with a high percentage of survival, while the varieties sown in rows completely winterkilled. The field plats were so located that they held a heavy covering of snow and were protected until late in the spring. The nursery rows were on higher ground, the covering of snow was not so deep, and they were bare earlier in the spring. All field plats and rows were sown last fall on bare fallow ground.

Selections from the cross made in 1913 between Beloglina, C. I. No. 1543, and Buffum No. 17, C. I. No. 3330,

sown last fall in rows under the same conditions as the other winter wheats, show as high as 75 to 90 per cent of winter survival.

Maximum temperature for the past week, 75 degrees; minimum, 24 degrees.

Farmers in the vicinity of the substation are just beginning their field operations. There has been a good demand for pure seed. Over 600 bushels of Power Fife and several bushels of oats and barley have been sold by the substation to farmers in this section.

Northern Great Plains Field Station. (Mandan) May 1. Mr. C. H. Clark reports that the weather continues cold, with snow flurries the past three mornings. The maximum temperature for the past week was 68 degrees (April 27); minimum, 23 degrees (May 1).

Wheat was seeded on April 27 and oats on the 28th. Flax sown on April 5 is just emerging.

UTAH:

Nephi Substation. April 30. Stands of winter grains in the varietal plats are very poor, but in the cultural tests there are some good stands of winter wheat. The rotation plats of winter oats and barley have been disked and reseeded to spring oats and barley. Some of the poorest plats of the winter wheat varieties have also been reseeded. Field peas sown in rotation plats on April 8 emerged on April 25 with fair stands. Several varieties of spring wheat and oats sown on April 11 have emerged with good stands.

Maximum temperature for the past week, 80 degrees; minimum, 33 degrees.

As the weather becomes warmer the conditions of winter wheat on the Levan Ridge improves, and the indications now are that a normal crop will be produced.

CALIFORNIA:

Biggs Rice Field Station. April 26. (Station) The rice has all been seeded and the plats are now being irrigated for the second time. The weather is favorable for germination. An excellent seed bed has been made and the seeding has never been done under as favorable conditions. (State) Some of the early maturing rices increased on the station last year are now being grown by farmers on commercial fields in cooperation with the station. The most promising variety has been sown on more than 200 acres. The area in rice in the State this season probably will total more than 60,000 acres.

Plant Introduction Garden. (Chico) April 26. The cereals are in good condition, although all show the effect of dry weather. They are now heading and harvest probably will begin about May 20 or 25. The wheat seeded for Dr. H. H. Love, of Cornell University, has made slow growth and does not look very good.

Wheat and barley throughout the State have been affected by the drought, which has lasted nearly eight weeks. Grain sown before December 15 is in fairly good condition. That sown later is short and probably will give poor yields. It is estimated that wheat and barley will yield only 50 per cent of the normal crop.

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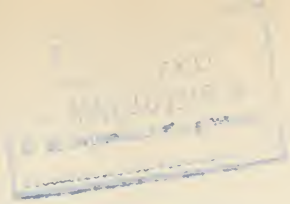

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May 12, 1916.

OFFICE NOTES.

Galley proof of Farmers' Bulletin 738, entitled "Cereal Crops in the Panhandle of Texas," by John F. Ross, was read during the past week.

A manuscript entitled "Dwarf Broomcorns," by Benton E. Rothgeb, has been transmitted to the Chief of the Bureau for publication in the Farmers' Bulletin series.

From Commerce Reports of April 20 we quote the following concerning Argentine crop conditions:

The acreage under cultivation and the estimated production of the principal grains in Argentina for the agricultural year 1915-16 as compared with that for 1914-15 were:

Grains	1914-15		1915-16	
	Acres.	Tons.	Acres.	Tons.
Wheat	15,470,200	4,585,000	16,420,085	5,012,000
Oats	2,868,875	831,000	2,564,830	1,095,000
Linseed	4,257,600	1,125,000	4,000,615	1,023,000
Barley	395,365	250,000	431,195	250,000
Rye	228,820		211,520	

FIELD NOTES

VIRGINIA:

Arlington Farm. May 12. Early-sown varieties of winter rye and winter barley are fully headed. Winter oats have begun to head. The work of removing weeds from the cereal nursery was finished during the week. Weather conditions during the past week have been generally fair.

WYOMING:

Cheyenne Experiment Farm. (Archer) May 6. The weather the past few days has been much warmer and the drought continues. Practically all grains seeded in field plats have emerged. Wheat, oats and barley were seeded in the nursery early last week. About three-fourths of one series containing the rate-of-seeding and some of the increase plats of winter wheat has been double disked and seeded to oats. The varietal and date-of-seeding tests with winter wheat in another series show a survival of from about 1 to 25 per cent.

A 10-acre tract of land to be used for forage purposes has been plowed and seeded to a mixture of peas and oats. Kaiser (S. P. I. No. 17006), Canada White, and San Juan Valley (or Colorado Stock) peas were sown with Swedish Select oats. Plowing for corn for silage on the experimental area is now in progress. A week ago the furrow slice contained considerable moisture and pulverized well, but now it is becoming hard and lumpy.

SOUTH DAKOTA:

Bellefourche Experiment Farm. (Newell) May 8. During the past week the remainder of the spring-wheat classification nursery and some of the plats in the date-of-seeding tests with wheat and flax were seeded.

Because of the dry weather of the past four weeks all grains have germinated slowly and are making slow growth. Strong winds on May 7 caused considerable soil blowing on land which had been summer fallowed and some of the grain was injured. Maximum temperature, 86 degrees; minimum, 26 degrees; no precipitation.

NORTH DAKOTA:

Dickinson Substation. May 6. During the past week the barley, emmer, and spring rye varieties were seeded. Barley was also sown in the rotation plats and in the nursery. Varieties of spring wheat in the nursery have emerged.

Seeding in the vicinity of the substation has progressed without interruption from unfavorable weather. Maximum temperature for the past week, 80 degrees (May 7); minimum, 20 degrees (May 1); precipitation, trace.

Williston Substation. May 6. Varieties of wheat, oats, and barley in field plats are just emerging. The grains in the first series of plats in the date-of-seeding tests, sown April 15, did not emerge until May 3, or about 18 days from time of seeding. The second series in the date-of-seeding tests was sown May 1. Maximum temperature for the past week, 87 degrees (May 6); minimum, 19 degrees (April 30); precipitation, 0.1 inch.

Northern Great Plains Field Station. (Mandan) May 6. Mr. Brinsmade reports that all wheat, oats, barley, and flax have been seeded in field plats and that part of the flax nursery has been sown. Flax sown on April 15 in the date-of-seeding test is emerging. Maximum temperature for the past week, 88 degrees (May 2); minimum, 28 degrees (May 1); precipitation, 0.05 inch (May 1 and 2) in the form of rain on the first day and sleet on the second.

MONTANA:

Judith Basin Substation. (Moccasin) May 1. Grains sown two weeks ago have emerged but are making slow growth. Part of the flax varieties have emerged and apparently were not injured by the low temperatures. All work is progressing favorably. The plat work is nearly finished.

Most of the farmers in the vicinity have finished reseeding. Some report that part of the late-seeded winter wheat that was thought to have lived through the winter is dead and will have to be reseeded.

Maximum temperature for the past week, 77 degrees (April 28); minimum, 18 degrees (April 30); precipitation, 0.27 inch in the form of snow.

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May 19, 1916.

OFFICE NOTES.

Mr. Anthony left Washington on May 14 to visit points in the West and Southwest in the interests of barley investigations. He will not return until about the middle of September.

Dr. Leighty left Washington on May 14 to visit points in the West in the interests of wheat investigations. He will return about the latter part of June.

Mr. Carleton returned on May 15 from his trip in the southeastern United States.

From Commerce Reports, May 13 issue, is taken the following paragraph on New Zealand's agricultural returns:

> "According to the latest figures compiled by the New Zealand Government Statistician and published in the Trade Review and Price Current of that country regarding the estimated yields of various agricultural products, the quantity of wheat is placed at 7,309,020 bushels, compared with 6,664,336 for the season of 1914-15, while the acreage is 333,233, compared with 229,600 in 1914-15. The estimated total for oats is 12,722,733 bushels, compared with 11,436,300 in 1914-15, while the acreage is 379,869, compared with 287,561 in 1914-15. In wheat there is a decrease of average per acre from 28.94 to 21.89, and in oats from 39.77 to 33.46. The acreage of barley is 29,803, compared with 18,437 last year, but the amount of the yield has not been estimated.

FIELD NOTES.

VIRGINIA:

Arlington Farm. May 18. Winter wheat varieties in both field plats and nursery are beginning to head. The rogueing of varietal plats was in progress during the week. Maximum temperature for the week ending May 17, 85 degrees (May 15); minimum, 45 degrees (May 10); precipitation, 0.91 inch (May 1-17).

SOUTH DAKOTA:

Bellefourche Experiment Farm. (Newell) May 15. The prolonged spring drought was ended by a good rain on May 11. Crops are in better condition than they have been for some time. High winds during the week caused much soil blowing and the grain crops were badly injured. About two inches of soil was removed from the grain plats. The plants are nearly all cut off at the surface but very few have been blown out completely. It is believed that they will recover, but most of the flax will have to be reseeded. Maximum temperature, 92 degrees; minimum, 25 degrees; precipitation, 1.06 inches.

Counting of stands was begun during the past week.

Highmore Substation. May 15. A precipitation of 1.61 inches from May 13 to 15 has been of much benefit to crops, which are in good condition. Prospects for good yields are favorable at present. The weather of the past week has been very changeable, high temperatures and rather strong winds prevailing during the early part while the latter part was cold and rainy with strong winds.

Agricultural Experiment Station. (Brookings) May 9. The work of seeding wheat, oats, and barley at Brookings, Cottonwood, Eureka, Highmore, and Vivian has been completed, with the exception of some of the nursery at Highmore. Weather conditions have been fairly favorable for field work, although the earlier part of April was cold and wet. Grains have emerged very slowly, requiring from 2 to 3 weeks as compared with about 10 days in ordinary seasons. Winter grains came

through in good condition at Highmore and Brookings. At Eureka, fields that were mulched with 3 tons of straw per acre during the latter part of November survived the winter well, while grain on all fields not so mulched, whether on corn stubble or summer fallow, were completely winterkilled. This is the second season that the mulch has been used successfully in this experiment.

NORTH DAKOTA:

Dickinson Substation. May 15. During the week flax varieties were sown in plats and selections, crosses, and a few varieties were seeded in the nursery. Varieties of wheat and oats have emerged, but growth is slow because of the cool weather. Maximum temperature for the week, 84 degrees; minimum, 28 degrees; precipitation,0.50 inch. On May 7, 8, and 9 a severe dust storm interfered with field work and injured early-sown wheat that had just emerged.

Williston Substation. May 13. In spite of high winds during the past week and the consequent drying and blowing of the soil, the moisture content is sufficient for the germination and growth of the small grains. All show a good stand and wheat, oats, and barley are from 2 to 3 inches high. Flax seeded on April 15 has produced an even stand. That seeded in rod rows on May 4 is emerging evenly. Flax was seeded in the varietal plats on May 9. Precipitation for the past week, 0.60 inch; maximum temperature, 84 degrees; minimum, 23 degrees (May 12). The tips of the leaves of all small grains were frozen on the 12th, injuring barley more than either wheat or oats. None of the plants seems to be killed, but all are coming up rapidly from the roots. The flax that had emerged does not appear to have been injured, not even the very small plants.

Farmers in the vicinity are still sowing wheat. Because of the unfavorable weather conditions of the spring and the small amount of fall plowing, much of the spring seeding is considerably later than usual.

Northern Great Plains Field Station. (Mandan) May 15. All of the flax seeded up to May 4 has emerged, as have also wheat and oats seeded April 27 in the varietal plats. Barley sown on May 5 is just beginning to emerge.

Precipitation, 0.02 inch (May 11); 0.32 inch (May 13); 0.26 inch (May 14); total for the past week, 0.60 inch. This rain came after most of the seeding was done and when the soil at the surface was becoming so dry and dusty that there was great danger of the seed being blown out by the severe winds, which still continue. The wind velocity averaged 16 miles per hour on May 9 and 10. At 9:00 P. M. on May 9 it was blowing 30 miles per hour and from 7:30 A. M. to 4:30 P. M. on May 10 the average velocity was 27½ miles per hour.

IDAHO:

Aberdeen Substation. May 15. Continued freezing weather has injured all crops. Spring grains and alfalfa are frozen to the ground. Winter wheat is injured to some extent but looks better than other grain crops. All fruit crops in the vicinity have been destroyed by the freezes. Minimum temperatures as low as 16 degrees have been recorded during the past few days and snow fell on May 14.

All spring seeding is completed. Sowing of wheat, oats, and barley in the nursery was finished on May 5. Spring plowing for fallow was completed May 1.

UTAH:

Nephi Substation. May 14. Fall-sown grains are growing slowly and are light green in color. Spring-sown grains are looking good. Soil moisture determinations show that the soil contains considerable moisture to a depth of 6 feet. The weather during the past two weeks has been dry and cold. Frost on May 10 severely injured orchards, gardens, and alfalfa fields. The temperature dropped to 20 degrees on May 10 and has been below freezing the past four nights. Maximum temperature for the week, 83 degrees; minimum, 20 degrees; highest average daily wind velocity, 9.6 miles per hour. On May 9 the average velocity from 9:00 A. M. to 5:00 P. M. was 15 miles per hour.

Spring plowing on the substation has been completed. Most of the farmers in the vicinity are just starting to plow, however. The ground is rapidly drying out and will be very dry before spring plowing can be completed if it does not rain soon.

OREGON:

Harney County Dry-Farming Substation. (Burns) May 1. The work of seeding is practically completed. Good stands of spring-sown crops seem assured. Winter cereals will not have a full stand, however, because of the extremely dry weather in the fall, which entirely prevented germination. The late spring did further damage by retarding spring germination. Maximum temperature for April, 79 degrees; minimum, 19 degrees; precipitation, 0.81 inch; evaporation, 4.632 inches. The total precipitation since October 1, 1915, amounts to only 5.77 inches, or about two-thirds of the normal. Unless more than the average amount of precipitation occurs during the remaining months of the growing season yields are likely to be low.

THE CEREAL REVIEW

OFFICE OF CEREAL INVESTIGATIONS

BUREAU OF PLANT INDUSTRY.

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May 26, 1916.

OFFICE NOTES.

Page proof of Farmers' Bulletin 738, entitled "Cereal Crops in the Panhandle of Texas," by John F. Ross, was read on May 24.

Attention is called to the change in number of the postoffice box for the Amarillo Cereal Field Station (John F. Ross, Supt.) from 729 to 1214, owing to the removal of the postoffice into the new Federal Building.

Mr. J. Allen Clark left Washington on May 26 for three or four months' work in the field in the interests of western wheat investigations. He will give special attention to the breeding and classification nurseries at Manhattan, Kans.; Chico, Cal.; Moro, Oreg.; Aberdeen, Idaho; Nephi, Utah; Moccasin, Mont.; Akron, Colo.; and Newell, S. Dak., and will also study the wheat experiments at several other stations.

FIELD NOTES.

VIRGINIA:

Arlington Farm. May 26. Winter barley varieties in both field plats and nursery have begun to ripen, while winter wheat and oats are heading. The weather

conditions for the week ending May 24 were favorable to plant growth. Maximum temperature, 78 degrees (May 20); minimum, 42 degrees (May 19); precipitation, 0.91 inch (May 23).

GEORGIA:

State College of Agriculture. (Athens) May 22. All the barley and the early varieties of oats have been harvested, as well as the nursery rows of barley. The harvesting of oats and wheat is now in progress.

At Ashburn and Quitman all varieties of barley and oats and the earlier varieties of wheat were harvested during the week of May 7. Most of the grains at these two points give promise of higher yields than last season. A new thrashing machine has been added to the equipment at Athens, to be used also at Ashburn and Quitman. Mr. Carleton visited Athens May 8 and 9, Quitman May 10, and Ashburn May 11.

The rainfall for the month of April was 1.84 inches. There was no precipitation from April 17 to May 22. Rain to-day broke this long drought.

TEXAS:

Amarillo Cereal Field Station. May 20. The early seeding of the date-of-seeding test with grain sorghum and broom corn was made on May 10. The regular main-crop seeding will be made next week.

A precipitation of 0.86 inch on the night of May 17 ended the drought of the past month. Small grains have been making little growth. The indications are that winter wheat will make a light crop.

COLORADO:

Akron Experiment Farm. May 22. A rain of 1.34 inches on May 20 and 21 broke the long drought, which fortunately had not yet materially injured the small grains.

Five hundred plants of Ghirka Winter wheat were transplanted from the field plat to the special wide-spaced nursery and are making good growth. Last fall 1,000 kernels of this variety were sown singly 1 foot apart each way, to permit selection. Many of these winterkilled and transplanting was done to restore the original spacing. Rye is beginning to head. Flax has made a much better start than usual.

On a trip of about 80 miles to the east and north of the Farm, it was observed that corn planting is nearly finished. Winter wheat sown on sod land, of which there was a considerable acreage in this section, has withstood the drought better than that on land that had been previously cropped to other grains. No flax was seen. North of the Farm, where the soil is sandier, conditions are much the same, but winter wheat and spring grains did not have so good a color.

WYOMING:

Chevenne Experiment Farm. (Archer) May 11. All growing grain, with the exception of winter rye, which looks fairly good, shows the effect of injury from drought and soil blowing. The germination and emergence of grains in the nursery are very uneven. During the past week there has been no precipitation. Strong winds and high temperatures have prevailed. On May 7 a wind velocity of over 30 miles per hour for several hours was recorded at a height of 2 feet above the surface of the ground.

Varieties of potatoes were planted on May 11.

(May 20) The drought was broken by several small showers during the latter part of the week, and a light rain is falling today. Precipitation for the week, 0.45 inch; maximum temperature, 57 degrees; minimum, 26 degrees; evaporation, 0.39 inch; average wind velocity, 9.9 miles.

Much of the grain in the cereal nursery has not yet germinated and probably will need to be reseeded. Varieties of flax and corn have been seeded in field plats and nursery.

SOUTH DAKOTA:

Bellefourche Experiment Farm. (Newell) May 22. Some of the plats on which the grain was destroyed by soil blowing were disked and harrowed during the past week but have not yet been reseeded on account of no rain. But little field work could be done. All grains are making fair growth. The plat stakes have nearly all been painted and will be placed in the field as soon as possible. Maximum temperature for the past week, 64 degrees; minimum, 31 degrees; precipitation, 1.45 inches.

Agricultural Experiment Station. (Brookings) May 17. During the past week the weather has been decidedly unfavorable for field work throughout the State. In some places the high winds have blown the seed out of the ground, particularly where land had been harrowed or leveled off too much. The only substation from which reports of injury from this cause have been received is Vivian, where the oats sown by the three-row group method seem to have been considerably injured. Oats seeded by the usual method were not seriously injured. Following the wind storms, a general precipitation lasting three days greatly benefited the grain, although the season is somewhat backward because of the unusually cool weather.

Seeding on all the substations was completed on time and as soon as the fields are sufficiently dry, corn planting will begin.

MINNESOTA:

University Farm (St. Paul) May 17. The season is extremely backward and the seeding of the rust nursery was not begun until May 4 because of the continued rain and cold weather. High winds and low temperatures prevailed during the week of May 7, during which time the larger portion of the wheat nursery was seeded. The grain sown in the nursery previous to May 8 has already emerged. A cold, rainy period set in on May 13 and has continued to the present date, making field work impossible for some time. Nearly 2 inches of rain fell during the 48-hour period from May 13 to 15. The growth of small grains has been slow during the past week.

NORTH DAKOTA:

Dickinson Substation. May 20. Seeding of grains is finished with the exception of proso and grain sorghums. In the vicinity of the substation seeding of oats, barley, and flax is still in progress. The acreage of these grains will be greater than usual owing to the smaller acreage of spring wheat. During the latter part of last week the weather was warm and favorable for the growth of grain, most of which has emerged. Maximum temperature, 73 degrees; minimum, 32 degrees; precipitation, 0.50 inch (May 13 and 14).

The soil moisture tests in the rotation plats show a good supply of moisture to a depth of 3 feet.

Agricultural Experiment Station. (Fargo) May 22. Spring seeding is very late in the Red River Valley and as a result the wheat acreage will be limited. The work was begun generally in the vicinity of Fargo on May 8 to 10. It has been interrupted by excessive rains, so that not more than 7 to 10 days of actual work in seeding have been done. High winds have done some damage on light soils and some reseeding has been necessary. In spite of an over abundance of moisture the soil is still in fine condition.

Williston Substation. May 20. All small grains are making good growth. Varieties of flax in field plats are emerging. Maximum temperature for the past week, 77 degrees; minimum, 28 degrees; precipitation, 0.27 inch.

Northern Great Plains Field Station. (Mandan) May 22. All of the flax has been seeded with the exception of a few nursery rows that would have been seeded today had it not been for the wind. The continued high winds have not done so much injury during the past week because the rain has kept the soil moist and has prevented soil blowing. Flax in the disease resistance experiments seeded May 5 emerged early last week, while that in the nursery rows is emerging rapidly since the rain. Maximum temperature for the past week, 71 degrees (May 20); minimum, 30 degrees (May 15); precipitation, 1.03 inches, of which 0.67 occurred May 21.

MONTANA:

Judith Basin Substation. (Moccasin) May 17. The weather this spring has been unusually cold and dry with considerable wind. During the first two weeks in May temperatures below freezing were recorded on 9 days, the lowest being 19 degrees on May 12. During the same period the highest temperature was 82 degrees on May 7. On May 10 the average wind velocity was 15.8 miles per hour for 24 hours. The precipitation so far this month has been 0.45 inch, mostly in the form of snow. All spring grains had emerged with good stands when the freezing weather began. With the exception of flax none was killed entirely but all were badly frosted. At present all grains are making but little growth and prospects for a crop are not promising. The flax in the varietal plats seems to have stood the freezing weather without much injury. The flax nursery, seeded in the west field where the soil blew more, probably will have to be reseeded. The increase field of Sixty-Day oats, which was farther advanced than any of the other grains, seems to have been entirely killed. It was noticeable that the grain farthest advanced was more severely injured than the grain that had just started.

OREGON:

Harney County Dry-Farming Substation. (Burns) May 16. There has been no beneficial rainfall for more than six weeks. Grains on the dry land are much in need of moisture, particularly those which were seeded later in soil too dry for germination. During the period from May 7 to 16 the minimum temperature has ranged from 29 to 14 degrees and as a result all crops have been injured with the exception of field peas. Winter wheats were frozen but not reduced in stand. Spring grains were frozen to the ground but probably 90 per cent will survive. Flax in the date-of-seeding test was reduced in stand from 60 to 90 per cent. One field of 80 acres of young alfalfa in the vicinity of the substation was entirely destroyed. The Baltic and Grimm strains have again demonstrated their superiority in withstanding effects of frost.

June 2, 1916.

OFFICE NOTES.

Mr. Carleton R. Ball left Washington on May 29 for several months' work in the field in the interests of western wheat investigations. He will return about September 1.

Mr. C. H. Clark returned from his trip to the West and Northwest on May 29.

FIELD NOTES.

GEORGIA:

State College of Agriculture. (Athens) May 30. All grains have been harvested with the exception of a few strains of wheat in the nursery. Indications are that all yields will be much higher than last season.

At Ashburn thrashing will begin on June 1.

OKLAHOMA:

Woodward Field Station. May 23. Milo, kafir, and broomcorn sown May 15, the second date in the date-of-seeding test, are emerging. The varietal plats of grain sorghum were sown on May 16 and 17, the spacing tests of broomcorn on May 19, and the varieties of broomcorn on May 22. The rainfall since January 1 has been only 4½ inches.

WYOMING:

Cheyenne Experiment Farm. (Archer) May 26. Cold, unfavorable weather is retarding the growth of all crops, although during the past week there were several good rains. Spring grains have in some cases sustained

quite serious injury from high winds and soil blowing. It probably will be necessary to reseed several of the spring-sown plats in the experiments conducted by the Office of Dry Land Agriculture. All winter wheat with the exception of a portion of the increase plats at the west end of the winter-wheat series, contiguous to a pasture, has been double disked and seeded to oats. A new cereal nursery, varieties of proso millets in field plats, and a ten-acre field of Kursk millet for forage, have been seeded. The corn for silage has also been planted.

Maximum temperature for the period from April 20 to 26, 83 degrees; minimum, 31 degrees; average wind velocity, 11.3 miles per hour; precipitation, 1.16 inches.

SOUTH DAKOTA:

Agricultural Experiment Station. (Brookings) May 26. Heavy rains throughout the State during the past week have somewhat delayed field work but have benefited growing crops. Most of the corn plats at the Station had been planted before the rains. Flax in the date-of-seeding tests was seeded on time at all of the substations. Grains are recovering rapidly from the injury by winds. Field work at all of the stations was never in better condition than at present.

Bellefourche Experiment Farm. (Newell) May 29. Grains are now in good condition because of recent rains. Not much field work has been done during the past two weeks. Wheat and flax in the date-of-seeding tests on dry land have been sown. Oats, barley, and flax which were destroyed by soil blowing have been reseeded. Maximum temperature for the week of May 22, 74 degrees; minimum, 37 degrees; precipitation, 1.23 inches.

NORTH DAKOTA:

Dickinson Substation. May 27. The continued cool and windy weather is retarding the growth of cereals, nearly all of which have emerged with fairly good stands.

The flax varieties are just emerging. Maximum temperature for the past week, 68 degrees; minimum, 35 degrees; precipitation, 1.07 inches, occurring during 6 different days.

The land now seeded to cereals and intended for permanent use in cereal experiments was divided into square blocks so that the cereal plats can be extended each year in a direction at right angles to that of the previous cereal cropping, in order to equalize the residual effect upon the land of the different crops. The blocks are 151¼ by 151¼ feet with roads 20 feet wide. The plats are 9 by 151¼ feet, each containing one thirty-second of an acre. Each variety was replicated three times.

Northern Great Plains Field Station. (Mandan) May 29. In spite of continued windy, cold weather flax and cereals are making good growth and show good stands. The varieties of perennial flax seeded last year which survived the winter are now in bloom.

Maximum temperature for the week, 68 degrees (May 27); minimum, 39 degrees (May 27); precipitation, 0.82 inch; average wind velocity, 8.6 miles per hour. On May 26 the wind velocity averaged 18 miles per hour in the morning and 17 miles in the afternoon.

Williston Substation. May 27. Small grains are making good growth although the weather has been cold during the past week. Flax both in field plats and in nursery rows has emerged with uniform stands. Millet and proso have been seeded both in field plats and rows.

Quite a large acreage of wheat was put in by farmers of the vicinity during the past week. Some land still remains to be seeded to wheat, although the general seeding of small grains is well advanced.

Maximum temperature for the past week, 64 degrees; minimum, 37 degrees; precipitation, 0.95 inch, 0.75 inch occurring on May 21 and 22.

MONTANA:

Judith Basin Substation. (Moccasin) May 29. Mr. Donaldson returned May 26 from a visit to the Dry-Land Agriculture field station on the old military reservation of Fort Assiniboine at Havre, Mont. He reports that the spring grains are more advanced than at Moccasin, although crops are very backward in both places. There was less winterkilling of winter wheat at Havre than at Moccasin and there are good stands on some of the plats, particularly those that were seeded late. The following spring grains were sown on the field station by Mr. G. W. Morgan, the seed having been supplied from the Judith Basin Substation.

Spring wheat.

C. I. No.	1584	Pelissier
" " "	1350	Pererodka
" " "	3641	Marquis
" " "	2398	Galgalos

Oats.

" " "	165	Sixty Day
" " "	459	Kherson
" " "	134	Swedish Select
" " "	441	Danish

Barley.

" " "	195	White Smyrna
" " "	531	Hannchen
" " "	590	Coast
" " "	595	Nepal

Flax.

" " "	19	Russian
" " "	12	Primost
" " "	14	N. Dak. Res. No. 73
" " "	30	Smyrna

IDAHO:

Aberdeen Substation. May 26. The weather remains cold and disagreeable. A rainfall of 1.16 inches has put the soil in excellent condition but warmer weather is needed for plant growth. The cultural tests on dry land were injured by high winds which preceded the rainfall. Increase plats of wheat, oats, and barley on dry land have been entirely destroyed. Many of the rotation plats have also been injured. The spring-grain nursery is not looking as well as in former years because of the frost. For the same reason the first cutting of hay will be less than half of the normal. Hundreds of acres of grain and sugar beets in the vicinity of the substation were destroyed by the high winds and will have to be reseeded.

UTAH:

Nephi Substation. May 28. Crop growth is very slow because of the cold weather. Potatoes planted on May 3 and 4 and corn planted May 8 have not emerged. Soil moisture determinations show that the soil on a large number of plats carries a relatively high percentage of moisture to a depth of 6 to 10 feet. Maximum temperature for the past week, 67 degrees; minimum, 26 degrees; precipitation, 0.96 inch (May 20 and 21).

THE CEREAL REVIEW

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June 9, 1916.

OFFICE NOTES.

Mr. Rothgeb left on June 6 for points in the middle west and in the south and southwest in the interests of grain sorghum and broomcorn investigations. He will return about September 15.

J. H. Parker, who has been pursuing post graduate studies in plant breeding and plant pathology at Cornell University since September, 1915, resumed his work with the Office on June 1. On June 9 he left Washington for St. Paul, Minn., where he will conduct experiments in the breeding of rust-resistant wheats. He will also visit the Iowa and Kansas experiment stations during the present month.

Visitors to the Office during the week included E. C. Johnson, Dean of Extension at the Kansas Agricultural College, and A. D. Wilson, Director of Extension in the College of Agriculture, University of Minnesota.

The following notes on cereal diseases will be of interest to members of the Office and others:

Recently Dr. Humphrey has found the Phytopthora disease of oats on wild oats in California, thus confirming the observations of McMurphy previously published.

The Physoderma disease of corn, already reported in this country by Prof. Barre, of South Carolina, and Prof. Barrett as occurring in Illinois, grows in importance. Mr. Carleton ascertained on his recent trip in the South

that this disease has been very serious in certain places in South Carolina and is reported to have destroyed, in some instances, as much as 50 per cent of the crop. Mr. Carleton also found that apparently the same fungus on corn has been discovered in two places in Florida. Recently specimens of the corn Physoderma have been received from Mississippi by the Office of Pathological Collections of this Bureau.

FIELD NOTES.

VIRGINIA:

Arlington Farm. June 9. Harvesting of winter barley varieties and selections is in progress. The earlier winter wheat, rye, and oat varieties are ripening. The grains generally are in good condition, but somewhat lodged as a result of the recent storms. The weather during the week ending June 7 was cool and stormy. Maximum temperature, 87 degrees (June 5); minimum, 46 degrees (June 1); precipitation, 1.14 inches. Total precipitation for the month of May, 2.59 inches.

GEORGIA:

State College of Agriculture. (Athens) June 5. There was a heavy rainfall on June 4 and the weather continues cloudy. As soon as the ground dries sufficiently thrashing of the small grains will be begun.

An inspection was made last Saturday afternoon of the varietal tests of wheat at the Second District A. & M. School, Tifton, Ga.

TEXAS:

Amarillo Cereal Field Station. June 3. All small grains have been affected by the drought and the indications are that the yields will be small. The grain sorghums were seeded during the period from May 20 to 31 and nearly all have emerged. Maximum temperature for the

week, 99 degrees; minimum, 55 degrees. Maximum temperature for the month of May, 98 degrees; minimum, 40 degrees. The precipitation during May was 0.86 inch, all of which fell on May 17; this is the lowest precipitation record for the month of May for 25 years. The evaporation from the 6 and 8 foot tanks averaged about 10 inches for the month. The wind velocity averaged 9.7 miles per hour by the 2-foot anemometer. During the week the relative humidity was as low as 4 and it is just about as dry as it can be.

OKLAHOMA:

Woodward Field Station. June 2. Broomcorn in the spacing tests has emerged with a good stand; that in the varietal plats has made a fairly good stand. The broomcorn nursery was seeded on May 30; as well as the kafir, milo, and broomcorn on the third date in the date-of seeding test. A precipitation of 0.90 inch in the form of rain and hail was of benefit to growing crops, the hail doing but slight damage. Moles have been a serious pest in the fields and large numbers have been trapped.

COLORADO:

Akron Experiment Farm. June 5. Flax, proso, and grain sorghums were seeded on May 31, the latest date in the date-of-seeding test. Weather conditions are favorable to rapid growth of cereals, although there is little moisture in the soil. Winter wheat is starting to head. Winter rye is nearly out of bloom. Spring grains have not made much growth. The trimming of the field plats and weeding of the nursery are nearly completed, while some rogueing of volunteer rye has been done.

Mr. Hungerford, of the cereal disease laboratory, is engaged in planting diseased barley in pots for water-requirement studies.

WYOMING:

Cheyenne Experiment Farm. (Archer) June 3. In spite of continued cool weather spring-sown grains are doing fairly well. All flax varieties in field plats and in the nursery have emerged. Corn is emerging. Sudan grass and varieties of sorghum were seeded June 3. A 10-acre field of Black Amber sorgo is being seeded for forage. Winter rye is growing rapidly and is beginning to head.

SOUTH DAKOTA:

Bellefourche Experiment Farm. (Newell) June 5. All grain crops are up and growing rapidly. The roads have been staked out and plowed. During the past week considerable work was done in the counting of stands. The stands on the winter-wheat plats were found to be considerably thinner than they were last fall. Much of the loss is believed to be due to dry weather and soil blowing this spring. Maximum temperature for the past week, 81 degrees; minimum, 41 degrees; precipitation, 0.28 inch. Total precipitation for May, 3.17 inches.

Highmore Substation. June 3. Excellent stands have been obtained of all grains except proso, which does not seem to respond to the cool, wet weather. Winter rye is headed and promises a good crop. The grain sorghums have been seeded but have not yet emerged. A large acreage of flax is being sown on breaking. A precipitation of 0.19 inch occurred on June 1, making it impossible to seed the June 1 plats in the date-of-seeding test until today.

Agricultural Experiment Station. (Brookings) June 2. Practically all cereals, including corn, have been seeded at the substations. The weather continues favorable for the growth of small grains, but it is hardly warm enough for corn. Winter wheat on corn stubble is much better than winter wheat on fall-plowed oat stubble. Winter rye on kaoliang stubble is noticeably better than on fall-plowed rye stubble. All of the A Class corn planting was completed before the recent rains. Nearly 400 single-ear rows in the corn breeding work are still to be planted. The small-grain nursery is in good condition.

Eureka Substation. June 1. Winter grain which was mulched came through the winter in good shape again this year, while that which was not mulched was entirely winterkilled. The method of growing winter wheat by mulching with straw is apparently very successful.

NORTH DAKOTA:

Dickinson Substation. June 3. During the week prosos and grain sorghums were seeded in varietal plats. Notes on stands of small grains were also taken. The soil is fairly moist, and crops generally are in good condition although a week or ten days later than usual. The work of seeding is practically finished in the vicinity of the Substation. Most of the corn has not yet emerged because of the cool weather. Maximum temperature for the past week, 72 degrees; minimum, 36 degrees; precipitation, 0.40 inch. Total rainfall for the month of May, 2.52 inches as compared with a 25-year normal of 2.62 inches; average wind velocity, 9.5 miles per hour as compared with an 8-year normal of 8.9 miles per hour.

Northern Great Plains Field Station. (Mandan) June 5. Flax and the small grains appear to be doing very well. Foliage and vegetation in general have come out very noticeably during the week, and the country presents a green appearance. Maximum temperature for the past week, 76 degrees (May 28); minimum, 38 degrees (June 1); precipitation, 0.12 inch (May 30); trace (May 28 and 29). The wind has not been so high as reported during the previous weeks.

Williston Substation. June 3. All small grains are looking good. Maximum temperature for the past week, 74 degrees; minimum, 34 degrees; precipitation, 0.51 inch. Precipitation for the month of April, 1.25 inches; 36-year average, 1.17 inches. Precipitation for the month of May, 1.87 inches; 36-year average, 2.17 inches.

MONTANA:

Judith Basin Substation. (Moccasin) June 1. All crops are making slow growth and are in need of warm weather. The flax nursery was reseeded on May 27. On the varietal plats of flax the stand has been reduced nearly 50 per cent by freezing weather and wind. The injury seems to have been caused as much by soil blowing as by cold weather. On the west side of the flax series, where there was some protection from an adjoining alfalfa field, the stand is much better than on the east side, which was fully exposed. Aside from flax, oats seem to have been injured most by the cold weather. The two selections of Kherson, C. I. Nos. 729 and 787, which were grown for the first time this year, seem to have been injured more than the other varieties.

Precipitation for the month of May, 1.89 inches,- an inch below normal.

OREGON:

Eastern Oregon Dry-Farming Substation. (Moro) June 1. Because of the cold weather, crop growth has been slow. Much damage has been done by wire worms. The earliest seeding of winter wheat is in the boot. Winter rye and winter barley are almost fully headed. Some winter wheat in the nursery is beginning to head.

Some interesting results were obtained this spring on the effect of harrowing winter grains to eradicate weeds. In October, 1915, increase fields of two varieties of winter wheat and one of winter barley were drilled east and west. The remainder of the 20-acre field was seeded to Bluestem wheat in November. In the spring weeds were abundant on this field and it was harrowed north and south, except that strips were left unharrowed. Some of the field was harrowed once and some twice. After harrowing, careful counts were made of the weeds on the harrowed and unharrowed areas. On the 26 areas of 1/4000 acre each on the unharrowed land there were 933 weeds, mostly tar weed, tumbling mustard, and barnyard grass. On the 26 similar areas on the harrowed land, there were 155 weeds. Where the ground had been harrowed once, 80 per cent of the weeds had been killed; where harrowed twice, 95 per cent of the weeds had been

killed. There was no appreciable difference in the stand of the grains on the harrowed and unharrowed areas, except in the case of the late-seeded Bluestem wheat, which apparently had not made sufficient growth to stand harrowing. Of the Bluestem wheat approximately 50 per cent of the plants were killed by harrowing.

Cold weather has prevailed during the greater part of the months of April and May. The mean temperature for May was 50 degrees, the lowest since records have been kept at the Substation. The lowest temperature for April was 28 degrees, May 18; for May, 29 degrees (May 10). The total precipitation for April was 0.75 inch and for May 1.37 inches, which is about the normal for these months. The precipitation since September 1, 1915, has been considerably above normal, however, the total being 14.55 inches.

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OFFICE NOTES.

Farmers' Bulletin 732, entitled "Marquis Wheat," by Carleton R. Ball and J. Allen Clark, was issued on May 29.

Farmers' Bulletin 738, entitled "Cereal Crops in the Panhandle of Texas," by John F. Ross, was issued on June 15.

A manuscript entitled "Dry Farming in Southern Idaho," by L. C. Aicher, was transmitted to the Chief of the Bureau on June 15 with the recommendation that it be published in the Farmers' Bulletin series.

FIELD NOTES.

GEORGIA:

Ashburn Substation. June 10. The thrashing of all grains has been finished. The highest yielding varieties of oats were Fulghum, Burt, and Early Ripe, which produced 53, 52, and 48 bushels per acre, respectively. The Bluestem and Georgia Red varieties of

wheat yielded 23.7 and 23.3 bushels respectively. Abruzzes rye yielded 25 bushels, as compared with 14.5 bushels from the native rye.

At the Quitman Substation thrashing will be begun as soon as the thrashing machine arrives.

WYOMING:

Cheyenne Experiment Farm. (Archer) June 10. All field plats seeded to cereals have been trimmed and the alleys have been cultivated, except those between the flax plats. All crops are growing rapidly since the weather has become warmer. Both common and proso millets have emerged. Potatoes planted on May 11 are now emerging. Maximum temperature for the period from June 1 to 10, 79 degrees; minimum, 28 degrees (June 7); precipitation, 0.08 inch; average wind velocity, 6.7 miles per hour; average minimum daily velocity, 4.7 miles per hour; average maximum daily velocity, 11.1 miles per hour.

SOUTH DAKOTA:

Bellefourche Experiment Farm. (Newell) June 12. All crops are growing well. Corn has emerged; winter rye is beginning to head. The proso and sorghum varieties and the latest sown plat in the date-of-seeding test with flax were seeded June 10. During the week the counting of stands was finished on a large number of plats and rows. Maximum temperature for the past week, 80 degrees; minimum, 42 degrees; precipitation, 0.18 inch.

Mr. F. D. Farrell, of the Office of Demonstrations on Reclamation Projects, visited the Farm June 6 to 9.

NORTH DAKOTA:

Dickinson Substation. June 10. During the past week the nursery was cultivated and notes on stands

were taken on all plats of spring grain and all nursery varieties. Crops are making rapid growth owing to higher temperatures during the latter part of the week. Cereal varieties in plats and nursery are about 6 inches high and stooling well. Flax varieties are about 2 inches high. Of the rye, N. Dak. No. 95 (C. I. No. 175) is nearly all headed, being about 30 inches high and having an excellent stand. Von Rümker rye (C. I. Nos. 173 and 174) is about a week later; the stand was much reduced by winterkilling. Maximum temperature for the past week, 78 degrees (June 9); minimum, 35 degrees (June 8); precipitation, 0.64 inch.

Some of the farmers in the vicinity of the Substation are still sowing flax and planting corn. The flax acreage will be large this year.

Northern Great Plains Field Station. (Mandan) June 12. All cereals are doing well with the exception of a few varieties of flax in field plats in which a considerable number of plants are dying, particularly in C. I. No. 30. Maximum temperature for the week, 78 degrees (June 9); minimum, 41 degrees (June 7); precipitation, 0.30 inch. On June 6 the wind velocity averaged 18 miles per hour from 7:00 A. M. to 4:30 P. M. and on June 7 it averaged 18 miles per hour from 7:00 A. M. to 12:00 M. and 20 miles per hour from 12:00 M. to 4:30 P. M.

Williston Substation. June 10. In spite of the cool, wet weather the first part of the week, small grains have made excellent progress. Wheat, oats and barley are from 4 to 6 inches high; flax is 2 inches high; proso and millet are emerging. Maximum temperature for the past week, 81 degrees; minimum, 37 degrees; precipitation, 0.90 inch.

On an automobile trip through the farming area 40 miles to the north of Williston it was observed that crops were in good condition. On some fields wheat was

from 2 to 4 inches high. As much of the wheat and oats were seeded late, however, the plants were just emerging and in many cases had not yet emerged. An unusually large percentage of wheat has been stubbled in, partly because of the lateness of the season and partly because of the small amount of fall plowing. Much of this wheat has emerged and is in good condition as a result of the plentiful supply of moisture in the soil. Farmers are still seeding barley and flax. A smaller acreage of flax has been seeded than last year. This probably is due to the high price of wheat, which has induced the sowing of a large acreage of this crop, even though it is necessary to stubble in the seed.

MONTANA:

Judith Basin Substation. (Moccasin) June 12. Cereal crops are beginning to make a little growth because of the warmer weather during the past week. All cereals are from two to three weeks late. There is sufficient moisture in the soil, but warmer weather is needed before crops can make much progress. Maximum temperature for the past week, 75 degrees (June 10); minimum, 38 degrees (June 6). Precipitation for the period from June 1 to 12, 1.25 inches.

The spring-wheat classification nursery has been seriously injured by frost and the work of gophers. At least a third of the rows have been totally destroyed and many of the remaining rows contain only one or two plants.

UTAH:

Nephi Substation. June 10. During the past week crops have made satisfactory growth. Most of the winter wheat is in the boot, although a few varieties in the varietal tests are heading. Winter varieties of oats

and barley are heading. Stands of corn in the rotation plats are poor; those of potatoes range from poor to good. Alfalfa is recovering from the effects of the frost and is growing nicely. Grain sorghums, flax, Sudan grass, Kursk millet, soy beans, and kidney beans, seeded May 26, have emerged. The stands range from poor to excellent. Maximum temperature for the past week, 88 degrees (June 10); minimum, 33 degrees (June 7); highest daily wind velocity, 8 miles per hour (June 10).

Dr. Leighty was a visitor at the Substation June 8.

Farmers in the vicinity of the Substation will cut their irrigated alfalfa as soon as possible, although the yield may be reduced to one-third that of a normal crop, in the hope of checking the ravages of the alfalfa weevil. With subsequent dragging of the fields it is expected that a good second crop and possibly a good third crop may be obtained.

CALIFORNIA:

Plant Introduction Garden. (Chico) June 6. Harvesting of the barley crop is finished. Wheat is rapidly ripening and will be ready for harvest within the next 10 days. The cereal nursery has given good results, with the exception that thin stands were obtained of the wheats seeded for Drs. Leighty and Love.

Dr. Leighty and Mr. Anthony have been at Chico for about two weeks. Dr. Leighty left today for Utah and Mr. Anthony will leave for Oregon in a few days. Mr. Ball, Dr. Humphrey, and Mr. J. Allen Clark arrived on June 3. Dr. Humphrey left yesterday for Oregon. Dr. Love is expected next week.

Indications are that yields of cereal crops in California will be less than 50 per cent of the normal this season because of the very dry weather in the spring. A great deal of the wheat has been cut for hay.

The rice crop is in good condition. It is earlier than last year and the stands are much better. The

area sown in the State probably will be more than 65,000 acres.

OREGON:

Harney County Dry-Farming Substation. (Burns) June 5. A precipitation of 0.55 inch on May 18 broke the long continued drought. The weather has remained cold, however, and there was little plant growth during May. Crops are recovering, however, from the effects of the unfavorable weather and they may yield as well as in 1915. Maximum temperature for the month of May, 80 degrees (May 3); minimum, 14 degrees (May 11); average minimum for the month, 30.8 degrees; total precipitation, 0.72 inch; evaporation, 4.649 inches; average wind velocity, 6.6 miles per hour.

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OFFICE NOTES.

Mr. Carleton left Washington on June 13 for New York City, Philadelphia, and Baltimore to confer with millers, grain dealers, and others concerning cereal investigations. He also gave an address before the Convention of American Macaroni and Noodle Manufacturers at the McAlpin Hotel, New York City, on June 13. He returned to the Office June 19.

Dr. Leighty returned on June 19 from his trip to the West in the interests of wheat investigations.

The following memorandum from the Office of the Secretary is of interest to members of this Office:

"On all Saturdays between June 15 and September 15, 1916, the Department of Agriculture will close at one o'clock P. M.

As provided in Paragraph 48 of the Administrative Regulations, Saturdays occurring between the above dates will be charged as four hours in annual leave and as a whole day in sick leave and without pay leave.

(Signed) Carl Vrooman
Acting Secretary.

A recent memorandum (No. 171) from the Office of the Secretary sets forth an amendment to Paragraph 97 of the Fiscal Regulations as follows:

"97. Immediately upon the <u>loss of a check</u> the owner should notify the disbursing clerk, or other fiscal agent, of the department in writing, giving, if possible, the date, the number, and the amount of the

check, in order that payment may be stopped immediately by that officer. He should then make every effort possible to trace the check through postal and other channels, which action, with the result thereof, should be made the subject of a supplementary report to the disbursing clerk or fiscal agent. In case the check is not found when the second report is made, the party of interest will receive from the Department a blank bond of indemnity for execution and return with an accompanying affidavit setting forth the circumstances attending the loss of the check. After the expiration of 30 days from the date of the original check a duplicate will be issued. In case a check reported lost is subsequently found, no attempt should be made to cash the same until the disbursing clerk, or other fiscal agent to whom notice of loss has been given, has been notified and until the party of interest has been advised that necessary action has been taken to remove the stoppage of payment.

D. F. Houston
Secretary."

Members of the Office of Cereal Investigations should report the loss of a check at once to the Office and the information will then be sent immediately to the Disbursing Officer through the proper channels.

Crop Conditions in Central Illinois.

Under date of June 14, Mr. Rothgeb writes as follows from Mattoon, Ill., where he spent several days investigating the culture of broomcorn:

Conditions are very favorable for crop growth in this section (Douglas and Coles counties, east central Illinois), though abundant rains during the past two weeks have delayed field work. Prospects for a large oat crop were never better. Early oats are in full head and the later varieties are heading. Wheat is an uncertain crop in this section, as it is likely to winterkill. It is estimated that fully 90 per cent of the wheat in the vicinity of Tuscola and Arcola was lost this year from this cause. The wheat which survived the winter has made good growth, but the stands are very thin in most fields.

Broomcorn production in Illinois is confined almost entirely to Douglas and Coles counties. The acreage around Mattoon in Douglas County is slightly larger than last year, while the acreage in Coles County is about normal. The early-sown broomcorn is now about 6 inches high and most of it has been cultivated once. Later seedings are just emerging. The best growers use more care in preparing the seed bed for broomcorn than for corn. One of the advantages of a good seed bed is that emergence and growth through the season are uniform. Broomcorn brush in this section is shed-cured. The sheds are built for this purpose, though they are used for storing straw, hay, or machinery when not needed for broomcorn.

FIELD NOTES.

VIRGINIA:

Arlington Farm. June 22. Harvesting of winter barley varieties and selections has been finished, while the harvesting of winter wheat and oats in both field plats and nursery is in progress. The weather during the past two weeks was cool and stormy. Maximum temperature, 86 degrees (June 18); minimum, 54 degrees (June 22); precipitation, 5.66 inches. Total precipitation for the month of June to date, 6.80 inches.

OKLAHOMA:

Woodward Field Station. June 15. The fourth plat in the date-of-seeding test with broomcorn was seeded today. The plats of milo and early kafir sown June 1, the latest date in the date-of-seeding test, show a good stand. The latest seeding of Dwarf Standard broomcorn will be made July 1.

The broomcorn nursery was reseeded on June 13. Heavy rains since June 1 washed out about half the nursery sown on May 30, therefore rows of all the varieties were resown on higher ground.

Broomcorn in the spacing test is making good growth. The plats of milo, kafir, and broomcorn from the first and second seedings in the date-of-seeding test have been thinned to a 6-inch stand. The early seedings of milo and broomcorn are 8 to 10 inches tall and all the sorghums are growing well.

The moles have been sufficiently reduced by trapping so that not much damage is now being done to crops. More than 100 have been trapped in the last few weeks. The stands of early and standard kafirs in the increase fields were much reduced by moles; the skips caused by them were reseeded today.

The precipitation for the month of June to date has been 7.28 inches; precipitation for the year to June 1, 4.36 inches.

WYOMING:

Cheyenne Experiment Farm. (Archer) June 16. Sorghum varieties have emerged with an excellent stand, this being in direct contrast to conditions last year. Varieties of corn, potatoes, peas, alfalfa, and sweet clover in rows have been cultivated. The winter wheat which survived is now in the boot. Winter wheat, which was listed in the fall on a Dry-Land Agriculture continuous wheat plat, has begun to head. Maximum temperature for the past week, 78 degrees; minimum, 42 degrees; precipitation, 0.34 inch.

SOUTH DAKOTA:

Bellefourche Experiment Farm. (Newell) June 19. The weather the past week has been favorable for crop growth. The soil is drying out and alfalfa fields are being irrigated. Some of the farmers in the vicinity of the Farm have already irrigated their grain and if rain does not come soon all crops will need to be irrigated.

During the past week the fallowed series were double disked to destroy weeds and volunteer grain. Ditches have been made on all of the irrigated grain plats. The counting of stands is nearly completed.

Highmore Substation. June 17. The weather of the past week has been favorable for crop growth and for the making of hay. The first cutting of alfalfa is just being made and is very heavy. The early barleys seeded on March 15 are nearly headed and winter wheat is beginning to head. Prospects are excellent for a big grain crop this year.

Agricultural Experiment Station. (Brookings) June 19. Crop conditions continue to be favorable at all the points where investigations are being conducted. Good stands of all cereals have been obtained, with the exception of two or three wheat varieties in the uniform-variety test in triplicate at Brookings and Highmore. Turkey winter wheat was headed on June 17. Winter rye will be ready to harvest in from two to three weeks. A trace of leaf rust has appeared on Turkey wheat at Brookings.

NORTH DAKOTA:

Dickinson Substation. June 17. In spite of the cool weather of the past week crops are in good condition and are stooling well. The nursery was weeded and the alleys between the plats were cultivated. Maximum temperature, 76 degrees; minimum, 40 degrees; precipitation, 0.29 inch.

Northern Great Plains Field Station. (Mandan) June 19. The weather during the past week has been favorable for crop growth. Weeds are becoming troublesome. A precipitation of only 0.04 inch during the week did more harm than good by evaporating immediately and drawing out more moisture from below. Although flax and the small grains look good now, they will soon need more moisture. Maximum temperature for the past week, 79 degrees (June 13); minimum, 40 degrees (June 12 and 15).

Williston Substation. June 17. As a result of very favorable weather during the week all small grains have made excellent progress. Maximum temperature, 80 degrees; minimum, 41 degrees; precipitation, 0.25 inch.

MONTANA:

Judith Basin Substation. (Moccasin) June 19. During the past week the weather has been warmer and all crops are making rapid growth. The spring grains are about 6 inches tall but are still about two weeks later than last year. All the plats have been trimmed and the roads have been graded. Maximum temperature for the week, 81 degrees (June 18); minimum, 40 degrees (June 14); precipitation, 0.33 inch. The latter was in the form of several light showers which were not of much benefit to crops.

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OFFICE NOTES.

Galley proof of Farmers' Bulletin 749, entitled "Grains for the Montana Dry Lands," by N. C. Donaldson, was read on June 27.

A meeting of cereal pathologists of the United States was held June 27-29 at the Iowa State College, Ames, Ia., for the consideration of problems of common interest.

Mr. Godfrey left Washington on June 25 for points in Iowa, Kansas, Missouri, Arkansas, Texas, Louisiana, Mississippi, Tennessee, and Alabama in the interests of cereal disease work. He will return about August 1.

Dr. Harlan left Washington on June 28 for St. Paul, Minn., where he will make observations on and study the barley breeding experiments conducted cooperatively on the University Farm. He will not return until the latter part of August.

The program of the Second Interstate Cereal Conference, to be held at University Farm, St. Paul, Minn., July 11, 12, and 13, 1916, will be as follows:

Tuesday, July 11
Morning Session 9:30 - 12:00

Symposium on Milling and Baking

C. H. Bailey: The Handling and Storage of Hard Spring Wheats.
L. A. Fitz: Methods of Milling.
R. W. Thatcher: Some Recent Investigations Concerning the Strength of Wheat Flour.
M. A. Gray: Hard Spring Wheat Flour from the Standpoint of the Commercial Baker.
L. M. Thomas: The Baking Value of Hard Spring Wheats.
J. A. Le Clerc: The Effect of Granulation on Baking Quality.
Emil Braun: The Use of Rye in Baking.

Afternoon Session 1:30 - 4:00

W. P. Carroll: The Grading of Corn.
A. G. Johnson: Ergot of Rye.
H. L. Bolley: Problems in Flax Diseases.
C. H. Clark: Increasing Flax Production.
L. H. Smith: Breeding Corn for the Northwest.
J. W. Daniels: Flaxseed and Linseed Oil, their History and Importance.

Wednesday, July 12
Morning Session 9:30 - 12:00

H. K. Hayes: Breeding of Winter Wheats for Minnesota.
C. E. Leighty: Spring and Winter Wheat Areas in the Northwest.
M. A. Carleton) Methods for the Eradication
E. C. Stakman) of Bunt or Stinking Smut.
C. W. Warburton: Oats for the Northwest.

Afternoon Session 1:30 - 4:00

Paul G. Sukey: The Cleaning of Barley.
T. S. Parsons: Barley Varieties in Wyoming.
D. H. Stuhr: Standards for the Grading of Barley.
Frank J. Seidl: Sources and Defects of Barley on the Minneapolis Market.

Thursday, July 13

Inspection of the plat work of the Minnesota Agricultural Experiment Station and of one of the local flour mills.

FIELD NOTES.

GEORGIA:

State College of Agriculture (Athens). June 27. Thrashing has been begun.

At the Quitman Substation thrashing was finished on June 20. The following varieties of oats gave the highest yields:

Hundred-Bushel	37.5 bushels
Texas Red Rustproof	34.7 "
Bancroft	33.5 "
Fulghum	32.0 "

There was but little difference in oats seeded November 1 and December 1. Nitrate of soda applied as a top dressing from January 15 to March 15 gave an increase of from 2 to 4 bushels per acre.

The Abruzzes rye yielded better than the native south Georgia rye. Of the wheats, the Bluestem and Georgia Red varieties made the highest yields.

OKLAHOMA:

Woodward Field Station. June 22. As result of high winds beginning June 21, when the average velocity was 20 miles per hour, the soil is drying rapidly and in spite of the heavy rainfall early in the month more rain may be needed soon. Most of the grain sorghum in the varietal tests has been thinned; broomcorn, both in the spacing and varietal tests, was thinned to the desired stand last week. The fourth seeding of broomcorn in the date-of-seeding test shows a good stand. Milo is badly infested with plant lice, which may cause some injury if hot, dry weather continues.

COLORADO:

Akron Field Station. June 22. Weather conditions are very favorable for the rapid growth of cereals. Winter wheat in the plats is nearly all headed, while spring wheat, oats and barley are beginning to head, as is also winter wheat in the classification nursery. Grain sorghums are making good growth. Some flax is in bloom. At present the flax which looks best is C. I. No. 1, obtained from Highmore, S. Dak. Weeds are very numerous both in the field plats and in the nursery because of slow growth in the early spring and the recent rains. Herbarium specimens of winter wheat grown in field plats have nearly all been gathered.

WYOMING:

Cheyenne Experiment Farm (Archer). June 24. Winter grains in the increase plats are now about 18 inches tall and are heading rapidly. Without more rain crops will be seriously injured. Many varieties of oats and barley are in the boot or beginning to head. Of the barleys, White Smyrna (C. I. No. 658),

Coast (C. I. No. 690), Blackhull (C. I. No. 878), and Gatami (C. I. No. 575) have begun to head. Kherson oats (C. I. No. 459) is beginning to head and Prelude spring wheat (C. I. No. 4323) is in the boot. Taken as a whole, the spring grains are very short. Varieties of flax both in the field plats and in the nursery have been hand weeded and are now making good growth. Maximum temperature for the past week, 83 degrees; minimum, 34 degrees; precipitation, 0.06 inch.

Mr. A. P. Jacobson, a representative of the Danish Government and Director of Extension of the Cooperative Agricultural Associations of Sjaelland (Zealand), Denmark, visited the Farm on June 23.

SOUTH DAKOTA:

Bellefourche Experiment Farm (Newell). June 26. The condition of the crops has been improved by the rains of the past week. Early oats in the dry-land rotations, and some of the barley, are beginning to head. The proso and sorghum varieties are just beginning to emerge. The counting of stands on all of the plats and nursery rows has been completed. Maximum temperature, 77 degrees; minimum, 42 degrees; precipitation, 1.71 inches.

Agricultural Experiment Station (Brookings). June 26. Mr. Champlin reports as follows his observations on a trip to the Vivian Substation on June 23 and 24.

"Small grain along the route from Brookings to Canton is rather backward for this season owing to the cool weather, but the indications are that it will make an excellent crop. Little or no rust was evident in any of the fields which I examined, except as previously reported in one field of winter rye at Brookings. I noted some blight in rye at Vivian, but it does not seem to be injuring the crop. Work is progressing satisfactorily at all the stations."

MINNESOTA:

University Farm (St. Paul). June 24. Mr. Parker makes the following report on the cooperative cereal disease work:

"Cereals in the nursery are making good growth, but due to the cool, rainy weather of the past week none of the wheats has headed and the making of crosses will not be possible until some time in July. Winter wheat sowed last fall on a small plat adjacent to the barberries survived the winter and is heavily infected with stem rust. Over 100 hand inoculations have been made throughout the rust nursery. Spraying with rust spores was started on June 16 and will be continued up to the time of heading. A fairly uniform distribution of stem-rust infection is already present throughout the various plats and there is little doubt that if the weather continues favorable for the propagation of rust a severe epidemic will be secured. Stem rust was abundant in the plats as early as June 17, - fully 2 weeks earlier than its usual date of appearance. So far leaf rust seems to be entirely absent. These conditions are just the reverse of those usually existing.

Mr. Piemeisel left St. Paul on June 22 for the purpose of collecting grass rusts in southern Minnesota and Iowa. He will return about July 1."

NORTH DAKOTA:

Dickinson Substation. June 24. Crops are in good condition as a result of the precipitation during the past week. Winter rye, N. Dak. No. 959, is in bloom and Von Rumker's rye, both green and yellow varieties, is almost fully headed. Maximum temperature, 69 degrees (June 18); minimum, 41 degrees (June 24); precipitation, 2.52 inches, most of which fell on June 22. Plat stakes were prepared during the past week and are being placed.

The following were visitors at the Substation during the week: Director Thomas P. Cooper of the North Dakota Experiment Station; Mr. J. T. Sarvis, of the Northern Great Plains Field Station, Mandan, N. Dak.; and Messrs. Alfred Wenz and Burke Critchfield, of the staff of the Dakota Farmer.

Northern Great Plains Field Station (Mandan). June 26. All crops are making rapid growth as a result of the abundant precipitation of the past week. Flax has developed very rapidly in the last few days. The first blossoms appeared today in the April 15 seeding of the date-of-seeding test and in two varieties in the nursery. The perennial flax is still in full bloom. Barley, oats, and wheat are doing very well, with the exception of Arnautka wheat, which is badly rusted. Maximum temperature for the week, 76 degrees (June 25); minimum, 41 degrees (June 19); precipitation, 1.36 inches, 1.17 inches of which was recorded on June 23.

Williston Substation. June 24. Winter rye is headed and spring rye is heading. Winter wheat is just beginning to head. Maximum temperature, 77 degrees; minimum, 47 degrees; precipitation, 2.08 inches.

IDAHO:

Aberdeen Substation. June 17. Crops are responding remarkably well to the favorable growing weather of the past six days. Winter wheat on the dry lands is 12 to 15 inches tall and is heading. Winter rye and Tennessee Winter barley are fully headed. Winter rye was injured by frost when in bloom and is setting little grain. Cereals in the nursery are making excellent growth. Several varieties of winter wheat are heading. Flax is not doing well, the late spring frosts having injured it somewhat. The rainfall for June is far below normal.

Farmers' Day will be held at the Substation on July 14. In the hope that there will be a large attendance, circulars and posters advertising the event are being sent over the greater part of southern Idaho.

WASHINGTON:

Adams Branch Experiment Station (Lind). June 21. Owing to lack of moisture since the first of the month crops are not doing well, particularly those on lighter

soils and poorer summer fallow. Prospects for good yields are not favorable and the yield probably will not be 65 per cent of the normal. This estimate must be reduced if rain does not soon fall. Temperatures during the past week have been unusually high for June. Maximum, 100 degrees (June 17); average daily maximum, 89 degrees; minimum temperature, 35 degrees (June 11); average daily minimum, 49 degrees.

Preparations are being made for fall work. The summer fallow is in good condition, - the best in the immediate vicinity. It has been weeded once with a spring-tooth weeder. Weeds are less troublesome than usual, most of the mustard having been killed out by cultivation previous to spring seeding.

In the poorer sections of Adams County there has been more soil drifting than for the past two years, most of it being due to late, dry plowing. One field less than 2 miles from the Station farm is blowing badly.

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OFFICE NOTES.

Mr. Warburton left on July 1 for Ames, Iowa, where he will study cooperative oat experiments for the next two weeks. He plans to visit the Indiana, Ohio, and Cornell University experiment stations and to return to Washington about August 1.

FIELD NOTES.

VIRGINIA:

Arlington Farm. July 6. Varieties and selections of winter wheat and oats have been harvested. The work of thinning and weeding the grain sorghum in the environmental experiment was done on July 5. Maximum temperature for the week ending July 5, 89 degrees (July 2 and 3); minimum, 63 degrees (July 5); precipitation, 0.02 inch. Total precipitation for the month of June, 8.21 inches.

TEXAS:

Amarillo Cereal Field Station. July 1. About half of the winter grains have been harvested. The indications are for a light yield. Some of the best plats of wheat may yield 15 bushels per acre. The first oats were harvested this morning. The grain sorghum is making fairly good growth, but the stand is not very good. During the past week the weather has been very dry, with hot winds and only a trace of precipitation. Maximum temperature for the month of June, 101 degrees; minimum, 51 degrees; total rainfall, 2.70 inches, this being a little less than normal.

OKLAHOMA:

Woodward Field Station. June 28. Sorghum and broomcorn are making rapid growth as a result of favorable growing weather and a beneficial rain on June 24. In the earliest sown plat in the date-of-seeding test with Dwarf Milo (C. I. No. 332) several stalks are starting to form boots. The stalks are from 3 to 3½ feet tall, uniform in size and height, and will soon begin to head. The broomcorn nursery sown on June 13 emerged with a fair stand on June 20. The fourth plat in the date-of-seeding test with broomcorn emerged with a good stand on June 21. On June 27 Dwarf broomcorn (C. I. No. 442) was seeded on a half-acre increase plat. Two varieties of Brown kaoliang (C. I. Nos. 328 and 293) are being experimented with for grain crops by the Office of Dry-Land Agriculture for comparison with Dwarf Milo (C. I. No. 332), which is drilled between the two varieties of kaoliang.

A large number of adult chinch bugs have been found in the grain sorghum and broomcorn and may cause injury if weather conditions favor their increase. At present, insects, which feed on the young bugs and destroy the eggs, seem to be keeping the pests in check.

From the first of June to date, there has been a precipitation of 10.26 inches.

WYOMING:

Cheyenne Experiment Farm. (Archer). July 1. All growing crops are making rapid progress because of the dry, hot weather. All varieties of barley in the field plats have begun to head. Blackhull (C. I. No. 878) is now fully headed. Of the spring wheats in field plats, Prelude (C. I. No. 4323) is the only variety that is heading. Several varieties of flax in both field plats and nursery have begun to blossom, as has also N. Dak. No. 1215 (C. I. No. 3) seeded April 15 and May 2. Winter wheats are almost fully headed, but the lower leaves of the culms are firing badly. The heads have started to fill. If rain does not fall soon the yield will be small.

Maximum temperature for the past week, 92 degrees; minimum, 51 degrees; evaporation, 2.30 inches; average wind velocity, 6.30 miles per hour; no precipitation. With a precipitation of only 0.48 inch, this June has been the driest, with two exceptions, for 46 years.

SOUTH DAKOTA:

Bellefourche Experiment Farm. (Newell). July 3. All crops are making excellent growth and show no injury from drought, although the ground is beginning to dry out. Much of the grain is now heading and early oats are fully headed. Considerable loose smut is appearing in the barley varieties. During the week the flax plants were rogued and the alleys in most of the plats were hoed. Maximum temperature, 91 degrees; minimum, 48 degrees; no precipitation.

Agricultural Experiment Station. (Brookings). June 29. Mr. Champlin makes the following report of his observations on a trip to the Eureka Substation:

"Cereal crops are in good condition at the Eureka Substation,- probably 50 per cent better than those in the surrounding country. Traces of leaf rust are noticeable in wheat and loose smut is appearing on barley in the area visited."

NORTH DAKOTA:

Dickinson Substation. July 1. The weather is favorable for the rapid growth of all crops. Winter wheat varieties are partly headed, and the early varieties of spring wheat, oats, and barley are beginning to head. During the past week all roads between plats were disked and the plats trimmed. The latter are now being weeded.

The weather during June was cool with many light showers and a few beneficial rains. Precipitation was recorded on 24 separate days; however, only a trace was recorded on 8 of these days. Total precipitation for the

month, 3.80 inches; maximum temperature, 83 degrees (June 27); minimum, 32 degrees (June 8). Maximum temperature for the past week, 83 degrees; minimum, 44 degrees; precipitation, 0.35 inch.

Williston Substation. July 1. Prelude and Manchuria wheats, Gatami barley, and Sixty Day and Kherson oats are 50 per cent headed. Other varieties of barley are beginning to head. Maximum temperature for the past week, 83 degrees; minimum, 43 degrees; precipitation, 1.59 inches, 0.92 inch of which fell during half an hour. Precipitation for the month of June, 4.72 inches. The 36-year average at Williston is 3.52 inches. The rainfall for April was 0.08 inch above norma; for May, 0.30 inch below normal; for June, 1.20 inches above normal.

MONTANA:

Judith Basin Substation.(Moccasin). June 26. Crops are still much later than they were last year at this time. Oats and barley are from 6 to 8 inches tall, while last year the early varieties were beginning to head. All plats have been trimmed and the roads graded and weeded. Maximum temperature for the past week, 77 degrees (June 19); minimum, 40 degrees (June 23); precipitation, 1.55 inches (June 21 and 22).

Messrs. J. H. Jacobson and F. E. Cobb, of the Office of Dry Land Agriculture, were visitors at the Substation during the week.

July 2. All crops have been making rapid growth during the past week. Stakes were set on all the plats. The weather of the first part of the week was cold and stormy. Precipitation, 0.84 inch; total for the month of June, 4.07 inches, which is 0.84 inch above normal.

Many farmers in the Basin report a high percentage of chess in their winter wheat. As most of the winter wheat that has survived is on stubble ground it is likely that chess was present in the fields last year but was not so noticeable because of the good stands.

UTAH:

Nephi Substation. June 28. Mr. Jones makes the following report of his observations on a trip to some of the dry-farming sections in the central and southern parts of the State: "Part of the trip was taken in automobile stages, and the principal farming sections were passed through. Crops in the southern and central parts looked rather poor, due to a late, cold spring and a rather prolonged drought. Winter rye and corn are the principal dryland crops south of Nephi this year, although there is considerable winter wheat."

Nephi Substation. July 1. Crops are looking fairly well in spite of the dry weather of the past 6 weeks. Winter wheat is in the soft dough stage and is about 24 inches tall. Spring cereals are heading very short but probably will make a fair crop. Peas and potatoes are looking fairly good. Corn is growing very slowly. Herbarium specimens from the winter-wheat classification nursery are being gathered. Maximum temperature for the month of June, 94 degrees (June 18); minimum, 30 degrees (June 2); no precipitation.

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OFFICE NOTES.

Attention is called to the fact that expenses for two fiscal years can not be included in the same voucher; a separate voucher for each year is required.

Mr. Stanton left July 4 for Ames, Iowa, to assist Mr. Warburton in the oat harvest at the Iowa State College experiment station. He will return to Washington early in August.

First page proof of Farmers' Bulletin 749, entitled "Grains for the Montana Dry Lands," by N. C. Donaldson, was read on July 14.

Acknowledgment is hereby made of the promptness with which definite information has been supplied, in almost every instance, by men traveling and stationed in the field, regarding items concerning the current and preceding fiscal year; this has greatly facilitated the work of the Office during the past two weeks and has made possible quicker service to the men themselves. Such cooperation is highly appreciated, particularly when it is realized how busy field men are during this season of the year.

FIELD NOTES.

COLORADO:

Akron Experiment Farm. July 10. Because of the dry weather winter wheat is ripening very rapidly and the indications are that the yields will be good. Harvesting was begun at the Farm today and farmers have been cutting for about a week. Much of the grain is short and is being headed. Spring-sown grains are not likely to recover even though rain should fall soon. The percentage of rust and smut will be low this year. Precipitation from January to June, inclusive, 6.36 inches.

Mr. J. Allen Clark visited the Farm during the past week.

WYOMING:

Cheyenne Experiment Farm (Archer). July 7. Because of the long continued drought the small-grain crops are badly stunted and are beginning to fire. Most of them would be greatly benefited, however, if rain should fall soon. All but three of the common spring wheats have begun to head, while Prelude (C. I. No. 4323) is fully headed. They are from 12 to 15 inches tall. The durum varieties are somewhat taller than the common spring wheats, and notwithstanding the adverse conditions are quite promising. Kherson and Sixty Day oats are also fully headed.

The alfalfa varieties, sweet clover, and brome grass have been harvested. Alfalfa varieties in rows yielded from 200 to 725 pounds per acre; sown broadcast on the Dry-Land Agriculture plats alfalfa produced 260 pounds per acre, most of which was border growth. Sweet clover (Melilotus alba) in rows produced 2,390 pounds per acre, while that sown broadcast yielded 890 pounds per acre. The yield of brome grass was at the rate of 400 pounds per acre.

Maximum temperature for the past week, 93 degrees; minimum, 51 degrees; no precipitation.

SOUTH DAKOTA:

Bellefourche Experiment Farm (Newell). July 10. Because of the continued drought the soil is drying out rapidly and crops on the dry-land portion of the Farm are in need of moisture. Most of the grain is now heading and some is fully headed. All of the grain on the Farm, below the ditch, was irrigated during the past few days. Much irrigating is being done on the project on account of the hot, dry weather.

Maximum temperature for the past week, 99 degrees; minimum, 52 degrees; no precipitation.

Highmore Substation. July 8. Lack of precipitation and high temperatures with hot winds are injuring the late varieties of small grains as well as the late-seeded varieties. Early-seeded early varieties will make a good yield even without more moisture. Early-seeded early barleys are beginning to ripen. Corn is almost of normal height because of the hot weather of the last two weeks. Rust had begun to develop on the winter wheat, but it has been checked by the hot dry weather, as has also the early blight which had begun to injure potatoes. The second cutting of alfalfa is just being made.

NORTH DAKOTA:

Dickinson Substation. July 8. All grain with the exception of late varieties is heading quite rapidly. Corn is recovering from the effects of low temperatures early in the summer. Crosses are being made between each of the winter-wheat varieties and N. Dak. No. 1997 (C. I. No. 3084), this variety having been less injured by winter-killing than the others. During the past week high temperatures caused the soil to dry out rapidly. Maximum temperature, 90 degrees; minimum, 50 degrees; precipitation, 1.08 inches, of which 1.02 inches fell during the night of July 7.

Northern Great Plains Field Station (Mandan). July 3. Nearly all the flax plats and part of the nursery are in bloom. The first headings of Sixty Day oats and Mariout barley were recorded on June 28. All other varieties

of oats and barley in the varietal tests have begun to head, as well as the three wheat varieties, Marquis, Preston, and Kubanka. Mr. Sarvis on returning from a recent trip to Dickinson reported that the crops at this Station look better than any he has seen elsewhere this season.

Maximum temperature for the past week, 88 degrees (July 2); minimum, 49 degrees (July 26); precipitation, 0.55 inch.

July 10. The warm weather of the past week has been favorable for crop development. Nearly all of the flax is in full bloom and some rows in the nursery have almost finished blossoming. Wheat, oats, and barley are nearly all fully headed. Alfalfa and brome grass were cut for hay early in the week. The flax hybrids under the hail screen at first grew considerably taller than those outside seeded at the same time and now sprawl out over the ground. The plats cropped continuously to flax for the past three years and the plat of N. Dak. Resistant flax (C. I. No. 8) are seriously affected by wilt, but the wilt-resistant plats of C. I. Nos. 13 and 14 are not perceptibly affected. Maximum temperature for the week, 95 degrees (July 7); minimum, 57 degrees (July 4); precipitation, 0.77 inch.

Williston Substation. July 8. The warm weather of the past week has caused rapid growth of all crops. Nearly all the small grains are either nearly full headed or beginning to head. Not only on the Substation but throughout this section of the State small grains are in excellent condition. Even stubbled-in spring wheat is looking almost as good as spring wheat on either fall or spring plowed land. Flax throughout the country also looks good. Maximum temperature for the past week, 92 degrees; minimum, 47 degrees; no precipitation.

The annual farm picnic and the annual corn and alfalfa picnic will be held as one general farmers' picnic on Friday, July 14, on the grounds of the Substation.

OREGON:

Harney County Dry-Farming Substation (Burns). July 3. Winter wheats are just beginning to head, as are the earlier varieties of spring wheat and the early sown spring grains in the date-of-seeding tests. Crops are nearly two weeks later than usual. Frost on June 10 (22 degrees) and June 20 (26 degrees) injured alfalfa and winter rye that was just heading. Karun wheat in the varietal test of spring wheats was most seriously damaged. In the varietal tests of spring barleys the Mariout was very badly injured. Some varieties were injured slightly while others were not at all affected. Whether this was due to the stage of development or to the non-resistance of the damaged varieties is not known, but from previous observation it would appear that it is largely the latter. The frosted plats can be picked out from among the others at a distance of several hundred feet.

Maximum temperature for the month of June, 93 degrees; minimum, 22 degrees; precipitation, 0.98 inch; evaporation, 6.915 inches; average wind velocity, 5.2 miles per hour. The precipitation of nearly an inch on June 30 and July 1 was of much benefit to crops. The rainfall for the season is still several inches below normal.

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OFFICE NOTES.

Mr. Godfrey returned on July 16 from his trip in the interests of cereal disease work.

Letters of authorization should be carefully read for the purpose of noting important changes, if any, and the possible necessity for authority to cover additional requirements of the work. As an example, on each authorization special mention is made of the recent change in the clause covering purchase of furniture.

Mr. Warburton writes as follows from Ames, Iowa, under date of July 18:

"Oat harvest on the Station was begun July 10 and the cutting of early oats is now practically complete. Barley harvesting was finished today. Early oats will yield well and be of excellent quality, as there has been practically no rain since harvesting began and no storms to lodge grain of any kind. Barley will be light because of hot weather during the ripening period, but will be good in color. Winter wheat is now ready for harvest. This crop is unusually late this year, due to a very thin stand on most plats. An ice sheet which was general over this section in February is believed to be responsible for the loss by winterkilling, which resulted in the thin stand. The crop on a few plats is very heavy and good yields should be obtained, but in general the varieties and strains will not produce more than 15 to 20 bushels to the acre. Corn has grown very rapidly in the last two weeks and is now up to or ahead of the usual stage at this time. Some fields are beginning to tassel and prospects for a good crop are excellent.

High temperatures have been the rule since July 1, the maximum having exceeded 90 degrees nearly every day. On July 15 the high point for the season thus far was recorded, 99 degrees. No rain has fallen since July 1, except very light showers on July 13 and 17. While crops are not yet suffering because of lack of moisture, good rains would be beneficial to corn and to meadows and pastures."

The second Interstate Cereal Conference was held at the University of Minnesota, University Farm, St. Paul, July 11, 12, and 13. On account of the absence of Dr. J. W. Gilmore, Prof. R. W. Thatcher was elected chairman. There was an attendance of 55, classified as follows: University of Minnesota, 16; graduate students of the University, 3; U. S. Department of Agriculture (Cereal Investigations, 6; Grain Standardization, 2; Bureau of Chemistry, 1), 9; five flour mills, 7; Minnesota Grain Inspection Department, 3; North Dakota Agricultural Experiment Station,1; Wisconsin Agricultural Experiment Station, 3; Colorado Agricultural Experiment Station, 1; Montana Agricultural Experiment Station, 1; Iowa Agricultural Experiment Station, 1; Illinois Agricultural Experiment Station, 1; commercial laboratory, 1; grain company, 1; malting company, 2; linseed oil company, 1; crop bureau, 1; Mill Journal, 1; bakery, 1; and fiber expert, 1.

Ten papers were read and discussed at the morning and afternoon sessions of July 11; 7 at the morning session of July 12. At the business session on July 12 the following Executive Committee was elected: R. W. Thatcher, Chairman, University of Minnesota; Chas. E. Chambliss, Secretary, U. S. Department of Agriculture; M. A. Carleton, U. S. Department of Agriculture; L. A. Fitz, Kansas Agricultural Experiment Station, and Frank J. Seidl, of the Gould Grain Co., Minneapolis. The afternoon of July 12 was spent in an inspection of the cereal experiments of the Minnesota Agricultural Experiment Station. On July 13 the conferees visited the Minnesota Grain Inspection Department, Grain Exchange, the Laboratory and Baking Department of the Pillsbury Flour Co., the Laboratory and Baking Department and experimental mill of the Washburn-Crosby Co., and the malting plant of the North Star Malting Co.

FIELD NOTES.

OKLAHOMA:

Woodward Field Station. July 17. The weather has continued hot and dry. The earliest sown plats in the date-of-seeding tests are well headed and will make fair yields. Some of the heads of the early grain sorghums in the varietal tests are being bagged in order to obtain seed for next year. Among the varieties are brown kaoliangs, White kafir (C. I. No. 370), White durra (C. I. No. 81), and feterita (C. I. No. 182). Broomcorn in general is not looking very good, due to plant lice and the dry weather. Broomcorn in the nursery looks better, as it is not so advanced as the main seeding.

WYOMING:

Cheyenne Experiment Farm. (Archer). July 14. Most of the small grain on farms in this vicinity is badly stunted. In general it is considerably shorter than that on the Farm, partly owing to late seeding. Several light showers during the week were of much benefit, but more rain is needed immediately. A field of winter wheat near the Farm is practically ready to harvest, while winter wheat on the Farm has only begun to ripen and probably will be ready to harvest in 10 days. Corn is beginning to tassel, although it will not average more than about a foot in height. Maximum temperature for the past week, 91 degrees; minimum, 49 degrees; precipitation, 0.49 inch.

Mr. W. A. Lloyd, Agriculturist in Charge of County Agent Work, Office of Extension Work in the North and West, visited the Farm on July 13.

SOUTH DAKOTA:

Highmore Substation. July 15. The weather continues hot and dry. The small grains are ripening rapidly and the early varieties will make excellent yields. Winter rye was harvested yesterday, as were also early seeded early

varieties of barley. Sixty Day oats are being harvested today. Nearly all of the winter wheat will be harvested on Monday. Yields will be reduced owing to an excess of nitrogen which has caused much lodging on land where nitrogen has been applied as commercial fertilizer or where small grain occurs in a rotation following a cultivated crop preceded by a legume. All cultivated crops are growing rapidly and are not yet showing the effect of lack of moisture.

Agricultural Experiment Station (Brookings) July 14. The weather during the past two weeks has been dry. Cereal crops are maturing rapidly. Rye harvest probably will be begun this week and winter wheat is nearly ready to harvest. Rust is making serious inroads on the spring wheat, particularly on Preston and Bluestem. There is a small percentage of scab on barley and some has been observed on Kubanka wheat.

Bellefourche Experiment Farm (Newell). July 18. Practically all of the small grain is now fully headed and early seeded grain on the dry land is ripening. Rust and loose smut have injured the grain somewhat. The precipitation of 0.71 inch last week was of much benefit to growing crops on the dry land; grain on continuously cropped land shows the effect of drought, however.

A large number of herbarium specimens have been collected in the spring-wheat classification nursery.

NORTH DAKOTA:

Dickinson Substation. July 17. The hot weather since July 1 has caused rapid progress in the development of all crops. All cereals with the exception of late varieties are almost fully headed. Crosses are being made between several of the most promising varieties of spring wheat. Maximum temperature for the past week, 89 degrees; minimum, 60 degrees; precipitation, 1.05 inches. While not so abundant as in the Red River Valley and in the northern part of the State, the rainfall here is sufficient for the normal development of all crops and at present the prospects are good.

Prof. G. A. Bricker, Instructor in Agriculture at Syracuse University, Syracuse, N. Y., was a visitor at the Substation during the week.

Northern Great Plains Field Station (Mandan). July 17. The weather continues warm. Sixty-Day oats are beginning to ripen, and some of the flax on the plats is beginning to turn. Flax seeded in the hail shelter is in such bad condition that probably it will be necessary to remove the cover to allow the plants to mature. Maximum temperature for the week, 93 degrees (July 10); minimum, 66 degrees (July 13 and 14); precipitation, 0.85 inch, July 10 to 16.

Mr. C. H. Clark arrived at the Station on July 16.

Williston Substation. July 15. Small grains look good generally but are beginning to show the effect of the drought, especially on light soils. Most of the small grains are now fully headed and some varieties of barley will soon begin to ripen. Winter rye is ripening and will be ready to cut in a few days. Maximum temperature for the past week, 94 degrees; minimum, 55 degrees; precipitation, 0.02 inch. The maximum temperature has not been below 88 degrees for any day during the past week.

The farmers' picnic held yesterday was attended by 1,500 to 2,000 persons.

UTAH:

Nephi Substation. July 16. In spite of the prolonged drought crops are looking good. Winter wheat is beginning to ripen on practically all plats. A few varieties of winter barley were harvested yesterday. Spring cereals look quite good, although growth is short. Intertilled crops are not making very rapid growth. Moisture determinations of the second lot of soil samples were completed on July 10. On cropped plats nearly all the available moisture has been used to a depth of 4 to 5 feet, but below 5 feet there still remains considerable available moisture.

Harvesting will begin on the Levan Ridge about July 18, as considerable wheat near the foothills is at present practically ripe.

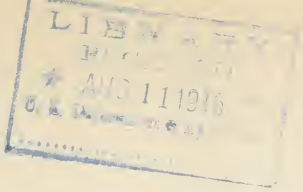
OREGON:

Eastern Oregon Dry-Farming Substation (Moro). July 10. All crops were much benefited by the rain on June 24 which broke the drought that had lasted from May 24. The earliest seeded winter wheat is beginning to ripen. All spring-wheat varieties are fully headed. Winter barley varieties have been cut.

During the month of June temperatures were considerably lower than normal, except for a period of six days from June 12. Maximum temperature for the month, 96 degrees (June 16); minimum, 36 degrees (June 9); precipitation, 1.98 inches, the highest ever recorded for June. On June 30 a cloudburst about 5 miles east of Moro destroyed considerable property and caused the death of 4 persons. Total evaporation for the month of June, 6.7 inches, about 1.5 inches less than the 5-year normal for that month.

Farmers' Day was held at the Substation on June 20 with an attendance of about 300.

Dr. Humphrey, Mr. Anthony and Mr. J. Allen Clark, of the Office, and Prof. H. D. Scudder, Agronomist of the Oregon experiment station, visited the Substation during the month of June. Eighty county agents of Oregon and State Leader Paul V. Maris inspected the Substation on June 29-30. Mr. Ball arrived on July 4 to remain until July 17.



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OFFICE NOTES.

The custodian of the Postoffice Building, Chico, Cal., has been authorized to assign Room 206-207-208 on the second floor for the joint use of the Bureau of Plant Industry and the Deputy Collector of Internal Revenue. The Bureau of Plant Industry will have approximately two-thirds of the room, or about 480 square feet, at its disposal. This space is for the use of Mr. E. L. Adams, of this Office, and Mr. Roland McKee, of the Office of Forage Crop Investigations, as well as for the convenience of members of the Bureau of Plant Industry who visit the Plant Introduction Garden.

Particular care should be taken in making out memorandum copies of transporation orders. There have been received recently several from which the date of purchase was omitted; others from which points of travel was omitted; and still others which did not state the price of tickets used. It is essential to have all of the data filled in.

FIELD NOTES.

VIRGINIA:

Arlington Farm. July 28. An Ellis Keystone Champion No. 1 thrasher has been added to the equipment of the Office and the work of thrashing winter wheat is in progress. The recent heavy storms have

greatly hindered the work, however. Maximum temperature for the week ending July 26, 95 degrees (July 21); minimum, 70 degrees (July 21); precipitation for the month to date, 4.97 inches.

The following table shows the yield per acre in bushels of the ten leading varieties and selections of winter oats and the ten leading varieties of winter barley:

Winter oats.

C. I. No.	Variety.	Yield.
435-4	Winter Turf selection	63.7 bus.
541-4	" " "	63.3 "
195-1	" " "	55.7 "
427	Winter Turf	55.3 "
274-I-22	Winter Turf selection	54.7 "
431	Winter Turf	51.6 "
274-20	Winter Turf selection	40.2 "
206	Bicknell	39.7 "
356-17	Italian Rustproof	39.3 "
273	Culberson (av.of 12 checks)	38.9 "

Winter barley.

C. I. No.	Variety.	Yield.
221	Greece	49.4 bus.
646	Tenkau	46.7 "
206-I	Han River	44.9 "
895	(Hybrid)	44.8 "
583	Union Winter	43.5 "
519-VIII	Wisconsin Winter	43.0 "
257	Tennessee (av.of 13 checks)	39.3 "
901	(Hybrid)	37.8 "
898	Omar	37.1 "
705	Black Russian	34.4 "

GEORGIA:

State College of Agriculture (Athens). July 18. All thrashing has been finished, with the exception of a part of the nursery. The highest yielding varieties of wheat, oats, and barley are as follows:

Wheat.

Australian Red	30.4	bus.
Mammoth Red (C.I.No 2008)	30.4	"
Leap Prolific	28.3	"

Oats.

Fulghum	75.3	"
Appler (Cokers R.B.12)	72.3	"
Hundred-Bushel	71.1	"
Texas Red Rustproof	69.1	"

Barley

C.I.No. 257, Tennessee Winter	61.5	"
" " 519, Wisconsin Winter	57.9	"
" " 220, Mammoth	56.3	"
" " 223, Argentine	55.3	"
" " 711, Turkestan	54.2	"
" " 705, Black Russian	48.0	"
" " 754, Nakano-Wase	46.4	"

Abruzzes rye yielded 31.0 bushels per acre and the native south Georgia rye, 30.2 bushels.

Oats seeded on Oct. 15 yielded 40.2 bushels per acre, while those seeded in November produced only 21.9 bushels.

There have been heavy rains throughout this section of the State for the last two weeks and all crops have been somewhat damaged.

OKLAHOMA:

Woodward Field Station. July 25. The hot, dry weather still continues. There has been no precipitation for over a month. Milo, kafir and broomcorn in the early seeding of the date-of-seeding tests are well headed and probably will make good yields. Broomcorn in the general seeding is forming the boot and is likely to be cut very short unless rain falls soon. Kaoliangs in the varietal test are well headed and are likely to make a fair yield in spite of the drought.

The alleys have been hoed, and the counting of stands and the selection of seed heads is being done as rapidly as the weather permits. Chinch bugs and plant lice have injured the milos and kaoliangs somewhat. The plant lice seem to have left the broomcorn as suddenly as they appeared, and if rain falls soon will not have hurt it to any extent.

SOUTH DAKOTA:

Bellefourche Experiment Farm (Newell). July 24. The dry weather of the past two weeks is beginning to affect the crops. Some of the grain is firing badly. All of it is maturing rapidly and some is ready to harvest. The proso millets are partly headed. Rust is becoming quite abundant in most of the grain.

A farmer's picnic was held at the Farm on July 22. There was an attendance of about 800.

Mr. C. S. Scofield arrived at the Farm on July 21.

Highmore Substation. July 22. Over half of the small grain, including early oats, has been harvested. Barley is all harvested with the exception of that in the head and rod rows; this will be ready early next week. Winter wheat and rye have been harvested, with the exception of the late-seeded plats in the date-of-seeding test. Several plats of flax have been harvested and most of the flax in the varietal plats will be ripe next week. A precipitation of 0.94 inch on July 15 was beneficial to the later seedings of small grain and hastened the ripening of the grain that was turning. Temperatures have continued high during the past week. Corn is beginning to tassel.

The first seeding in the date-of-seeding test with winter wheat and rye was made on July 19.

NORTH DAKOTA:

Dickinson Substation. July 22. Due to the uniformly warm and clear weather of the past week all crops have matured rapidly. Sixty-Day and Kherson oats are beginning to ripen 10 days earlier than last year, while the date of heading was about the same as last year. Winter rye and the early varieties of barley are also beginning to ripen.

Rust appears on the leaves and leaf sheaths of wheat both at the Substation and in all wheat fields examined in the vicinity of the Substation. Notes taken on all the plat varieties of wheat show less rust on the durums than on any other varieties. If the present dry weather continues no serious results are expected. Maximum temperature for the past week, 89 degrees; minimum, 42 degrees; precipitation, 0.10 inch.

Northern Great Plains Field Station (Mandan). July 24. The warm, rainy weather has continued during the past week. Sixty-Day oats are fully ripe and most of the flax in the plats has begun to ripen. Flax on farms in the vicinity of the Station is now in full bloom.

Maximum temperature, 90 degrees (July 18); minimum, 54 degrees (July 19).

Williston Substation. July 22. Crops were much benefited by a precipitation of 0.82 inch on July 16 and 17. Winter rye is ripe and winter wheat is nearly so. The earliest oats and several varieties of barley will ripen in a few days. Prelude wheat is also beginning to ripen and will be ready to harvest in a week or two.

It was observed on a recent trip into the farming districts in the vicinity of the Substation that, with the exception of a few fields where either wheat, oats, or barley was very short, the crops looked well.

Fields of small grains generally show indications of heavy yields. There is some leaf rust on wheat, as usual, but stem rust probably will do little damage.

Maximum temperature for the week, 89 degrees; minimum, 51 degrees; precipitation, 0.82 inch.

MONTANA:

Judith Basin Substation (Moccasin). July 18. All crops have been making rapid growth during the past two weeks. Early barley and oats are fully headed, while the later varieties are just beginning to head. Prelude spring wheat (C. I. No. 4323) headed 10 days earlier than any other variety and is now fully headed, while the other varieties are just beginning to head. All flax varieties are in bloom, C. I. Nos. 9 and 30 being the first.

The precipitation for the month of July to date has been 1.61 inches, all of which fell during the first part of the month. Since then the weather has been warm and dry. Heavy hailstorms and cloudbursts are reported as doing considerable damage in some parts of the Basin. Crops in the Basin look good. Winter wheat is fully headed, and the early-seeded spring wheat is beginning to head.

The eighth annual farmers' picnic will be held at the Substation on Friday, July 28.

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OFFICE NOTES.

Mr. Warburton returned on July 29 from his trip to Iowa and New York in the interests of oat investigations.

Mr. Stanton returned to the Office on August 3 after finishing his work at the Iowa experiment station, Ames, Ia.

FIELD NOTES.

COLORADO:

Akron Experiment Farm. July 28. The weather continues hot, dry, and windy. Spring wheat, oats, and barley have nearly all been harvested; much of the grain is badly shriveled. Flax is beginning to ripen. Grain sorghum soon will be fully headed. The prosos are making good growth. Two hundred and twenty-five selections of Winter Ghirka wheat have been collected. Mature heads from the classification nursery are being gathered.

SOUTH DAKOTA:

Bellefourche Experiment Farm. July 31. During the latter part of the past week a precipitation of 1 inch benefited crops considerably. Most of the grain has begun to ripen or is already ripe. Harvesting was begun July 27. Maximum temperature for the past week, 103 degrees; minimum, 56 degrees; precipitation, 1.00 inch.

Mr. J. A. Clark arrived at the Farm on July 26.

Highmore Substation. July 29. The weather of the past week has been favorable for harvesting the rapidly ripening grain, and the work is finished except in the late seedings in the date-of-seeding tests and a small part of the nursery seedings. Black rust has attacked the wheat, which is all injured with the exception of the very earliest seedings. Seedings made after April 15 are almost a total failure. Durum wheats have not been as much injured by rust as other varieties, although they are more severely affected than usual. One of the pedigreed selections from Kubanka (C. I. No. 1516) is very rust-resistant, showing less than a 5 per cent infection. The rust attack is general over the eastern part of the State.

Corn and potatoes which have been properly cultivated are making good growth and do not yet show any injury from drought. Alfalfa probably will produce a good crop of seed.

A three-day automobile trip was made through the western part of the State between the Missouri River and the Cottonwood Substation. Although not much farming is practiced in this section it was observed that early-seeded, early maturing crops probably will make good yields. The effects of the drought seem to have been most severe at the Cottonwood Substation. Early maturing crops, such as winter rye and wheat, and early-seeded Sixty-Day oats and Gatami barley probably will make excellent yields. Kubanka durum wheat was not yet harvested, but its appearance indicated that it would make a light yield.

Extreme temperatures have prevailed during the past week; maximum temperature, 102 degrees (July 28).

Agricultural Experiment Station (Brookings). July 25. There has been but little rain but the continued hot weather and heavy dews have been favorable for the development of rust. It is estimated that the wheat yield will be reduced from 20 to 40 per cent. In the eastern part of the State durum wheat and barley are considerably affected by scab. All of the rye and most of the barley and oats on the Station have been harvested. Most of the spring wheat will not be mature for about ten days. Corn is beginning to tassel and does not yet show the effect of the dry weather.

July 31. Harvesting of the cereals is finished, with the exception of the later varieties of spring wheat. All grain crops have been injured somewhat by the drought and by rust, particularly in the eastern part of the State. Sixty-Day oats and early varieties of other crops had been harvested, however, before the drought became serious. Kubanka wheat looks exceptionally good in spite of the drought. The yield of late oats and wheat will be very light. Corn has not yet been seriously injured.

NORTH DAKOTA:

Dickinson Substation. July 31. All crops are making rapid growth because of the continued warm, dry weather. Winter rye, N. Dak. No. 959 (C. I. No. 175) was harvested on July 28. Early varieties of oats and barley are nearly ripe. Marquis wheat in this vicinity is ripening and the general harvest will begin in a week or ten days. Stem rust of wheat is reported from many sections of the State. In spite of the dry weather it is probable that late-seeded wheat in this section will be severely injured. Maximum temperature for the past week, 96 degrees; minimum, 50 degrees; precipitation, 0.15 inch. Maximum temperature for the month of July, 96 degrees; minimum, 42 degrees; precipitation, 2.36 inches, as compared with a 25-year normal for July of 2.23 inches.

Prof. J. H. Shepperd, Vice Director of the North Dakota Agricultural Experiment Station, inspected the Substation during the past week. Mr. Henry R. Cates, of the Office of Forage Crop Investigations, visited the Substation in the interests of weed investigations.

Agricultural Experiment Station (Fargo). July 31. Small grains are maturing rapidly due to the excessive heat. Some barley and early oats have been cut. Rust will materially reduce grain yields in the Red River Valley.

Prelude wheat, seed of which was obtained from the Williston Substation, is not very promising for this vicinity. Though it ripens very early, it does not seem to be rust resistant, being considerably injured this year. Marquis and other varieties growing immediately beside it as yet show little injury.

Northern Great Plains Field Station (Mandan). July 31. Sixty-Day oats in the varietal test and on the Dry-Land Agriculture plats was cut early in the week. All other oats in the varietal test are ripening. All of the barley varieties are fully ripe and are being cut today. Marquis wheat is also fully ripe, while all the other varieties of wheat in the varietal test are partly ripe. Flax is ripening and on some of the plats probably will be cut before the end of the week. Maximum temperature for the past week and for the year to date, 98 degrees (July 29); minimum temperature for the week for July, 50 degrees (July 24); precipitation, 0.41 inch; precipitation for July, 3.55 inches.

Williston Substation. July 29. All small grains on ground that was cropped to small grains last year are suffering from lack of moisture, due to the lack of precipitation and the drying out of the ground. While they look good from a distance and have good length of straw, a close examination of the heads shows that the kernels are not filling well. Most of the barley in field plats and in the nursery is ripe and harvest will begin early next week. Sixty-Day and Kherson oats are ripe; Prelude wheat is nearly ripe. Maximum temperature for the past week, 89 degrees; minimum, 49 degrees; precipitation, 0.02 inch; precipitation for July, 0.86 inch, or 1.13 inches below normal.

During an inspection of the fields in the vicinity of the Substation improved conditions were noted in localities where local showers had fallen within the past few days. Injury from rust is not serious at present. Stem rust was found in many of the wheat fields to an extent of about 20 per cent, the heaviest infection being on the more thrifty fields that will not ripen for two or three weeks. Bluestem wheats are not rusted as badly as those of the Fife and Preston groups and the durums are practically free.

IDAHO:

Aberdeen Substation. July 28. Winter wheat harvest is in progress on the Substation and in the vicinity. Due to the continued cold weather in the spring and

the subsequent drought the yield will be only half of the normal. Thin seedings will give best returns both in quality and quantity of grain. On the dry land the yield of spring grains will be about the same as that of winter grains. Irrigated field crops look very good. White Smyrna barley has been harvested and many of the 6-rowed varieties will be harvested today. Indications are that the yields of spring wheats and oats will be very high, and that field peas will produce remarkably well.

A number of those who attended the Conference of Western Agronomic Workers at Logan, Utah, visited the Substation on their return. Among these were Mr. M. A. McCall, in charge of the cooperative cereal investigations at the Adams Branch Experiment Station, Lind, Wash.; Mr. M. B. Boissevain, of the Washington Agricultural Experiment Station; Messrs. Stephens and Schneiderhan, of the Eastern Oregon Dry-Farming Substation, Moro, Oreg.; and Mr. G. S. Ray, of the Idaho Agricultural Experiment Station. Mr. L. M. Jeffers, of the Portland (Oreg.) laboratory of the Office of Grain Standardization, and Mr. Roland McKee, of the Office of Forage Crop Investigations, were also visitors at the Substation.

The Southern Idaho Power Company has just completed an electric line to Aberdeen. A line has been run to the Substation and light and power will be available soon.

The attendance on Farmers' Day at the Substation was about 400. It was made up of farmers from both the irrigated and dry farms in various sections of southeastern Idaho.

UTAH:

Nephi Substation. July 29. The continued drought of the past two months was broken this week by a precipitation of 0.65 inch in the form of several thunder showers. This probably will be of some benefit to the intertilled crops. During the past week practically all the wheat has fully ripened. Indications are that most

of the grain will be reasonably well filled in spite of the drought. Spring cereals are ripening early.

Nearly all the wheat on the Levan Ridge is ready for the header and one or two outfits began work this week.

Mr. L. M. Jeffers of the Portland (Oreg.) laboratory of the Office of Grain Standardization, and Mr. C. R. Ball visited the Substation on July 21 and 22. Dr. F. S. Harris, of the Utah experiment station, was a visitor at the Substation during the past week.

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August 11, 1916.

OFFICE NOTES.

The Agricultural Appropriation Bill, appropriating funds for the fiscal year ending June 30, 1917, was signed today, August 11. Field men and members of the Office on travel status have been notified.

Mr. Warburton left on August 11 for Aberdeen, Idaho, where he will study the oat experiments at the Aberdeen Substation. His itinerary will also include Archer, Wyo., and Akron, Colo., and he will return to Washington early in September.

Galley proof of Department Bulletin No. 398, "Cereal Experiments on the Judith Basin Substation, Moccasin, Mont.," and Department Bulletin No. 402, "Cereal Experiments on the Akron Field Station, Akron, Colo.," was read during the week.

Great Plains Cooperative Association.

In view of the uncertainty till a late date as to whether or not funds for travel would be available, the comparatively small number of titles for papers which had been submitted, and the unfavorable crop conditions prevailing at Amarillo this season, the executive committee of the Great

Plains Cooperative Association has decided not to hold the meeting of the Association announced for Amarillo, Tex., on August 22-24.

FIELD NOTES.

GEORGIA:

State College of Agriculture (Athens). Aug. 5. Thrashing of the cereals in nursery rows is finished. All grain is being cleaned and graded. The precipitation for the month of July was very heavy and all field crops were somewhat damaged.

WYOMING:

Cheyenne Experiment Farm (Archer). Aug. 5. Winter wheat was harvested on July 25. Prelude spring wheat (C. I. No. 4323) was harvested on July 27, while several other varieties soon will be ready to cut. Durum wheats have begun to ripen.

All of the early oats, both in field plats and in the nursery, have been harvested. Yields will be low. The Swedish Select and Kherson varieties, sown on land on which winter wheat was destroyed by soil blowing last spring, look exceptionally good and soon will be ready for harvest. Barley in field plats, with the exception of Primus (C. I. No. 532) was harvested during the period from July 24 to August 1. Flax varieties have made good growth in spite of the dry, hot weather and all have begun to ripen. Corn, sorghum, millets, and Sudan grass are growing rapidly. The yield of forage probably will be fair due to a beneficial precipitation on July 30 and 31.

Practically all of the winter wheat in this vicinity has been harvested for more than a week. While the grain is of good quality the yield probably will not average more than 5 or 6 bushels per acre. Only one field in the vicinity will yield as high as 15 or 20 bushels per acre. This was seeded on oat stubble. Wherever winter wheat survived the winter it had been seeded on stubble.

Maximum temperature for the week ending July 28, 93 degrees; minimum, 49 degrees; precipitation, 0.04 inch. Maximum temperature for the week ending August 4, 89 degrees; minimum, 54 degrees (Aug. 1 and 2); precipitation, 1.05 inches.

Mr. J. S. Cole, of the Office of Dry-Land Agriculture, was a visitor at the Farm on July 22.

SOUTH DAKOTA:

Bellefourche Experiment Farm (Newell). Aug. 7. During the past week winter rye and early varieties of the other grains were harvested. The increase fields of oats and barley were also cut; harvesting of the nursery has been begun. Winter wheat is now practically all ripe and much of the spring wheat is also ready to cut. Early varieties of oats and barley have been ripe for several days. Both wheat and barley are badly rusted. Maximum temperature for the past week, 96 degrees; minimum, 57 degrees; precipitation, 0.21 inch.

Highmore Substation. Aug. 5. The weather of the past week has been favorable for outdoor work and thrashing has been well begun. Early oats of the Sixty-Day type on the rotation plats are yielding from 60 to 75 bushels per acre. All grain will be light in weight.

The yields of Hannchen barley (C. I. No. 531) in the date-of-seeding test are as follows:

Date of seeding.	Yield per acre.	Weight per bushel
March 15	47.9 bus.	49.0 lbs.
April 1	42.7 "	42.0 "
April 15	40.6 "	39.0 "
May 1	27.1 "	36.0 "

NORTH DAKOTA:

Dickinson Substation. Aug. 5. Early varieties of wheat, oats and barley in field plats and nursery rows were harvested during the week. Prelude wheat ripened several days earlier than the winter wheat varieties, which are now nearly ready to harvest. Oats in field plats were badly lodged as a result of a storm on August 5, when 1.60 inches of rain fell. Maximum temperature for the past week, 96 degrees; minimum, 53 degrees; precipitation, 1.67 inches.

Mr. Max Pfaender, horticulturist at the Northern Great Plains Field Station, Mandan, N. Dak., visited the Substation during the week.

About 80 farmers from the vicinity of Mott, 50 miles southeast of Dickinson, visited the Substation on August 1. They were much interested in the plats of drought-resistant and rust-resistant varieties of grain. Crops in their own section were badly injured by drought and rust this year.

Northern Great Plains Field Station (Mandan). Aug. 7. Some of the flax is ready to cut, though none has been harvested as yet. All of the oats in the varietal tests, with the exception of White Russian, have been cut. Two varieties of durum wheat, Kubanka and Arnautka, remain to be cut. They seem to be less affected by rust than any of the other varieties in the test. Of the varieties already cut Haynes seems to have been most injured, while Marquis is least affected. Wheat in the vicinity of the Station seems to have been much injured by rust, especially Bluestem. Barley and oats although somewhat affected by rust, both at the Station and in the vicinity, have not been injured appreciably. Maximum temperature for the week, 98 degrees (Aug. 4); minimum, 54 degrees (Aug. 5); precipitation, 0.43 inch.

Williston Substation. Aug. 5. During the past week all grains have ripened very rapidly. The indications are that yields will be heavy. All of the barley has been harvested. All oats, with the

exception of varieties of the White Russian group, and all wheat varieties, with the exception of Red Fife, Glyndon, and Power Fife, have been harvested. Power Fife and Siberian oats on the large fields are nearly ready to cut.

On farms in the surrounding country harvesting of barley and Marquis wheat has been begun. The drought has affected the late-seeded grain, but since early this morning a steady rain has fallen, which will be of much benefit. Maximum temperature for the week, 96 degrees; minimum, 53 degrees; precipitation, 2.26 inches.

MONTANA:

Judith Basin Substation (Moccasin). July 31. All crops are heading and the early varieties of flax, spring wheat, oats, and barley are beginning to ripen. So far none of the grains shows the effects of the drought, but unless rain falls soon spring wheat and the late varieties of oats and barley will be injured. The past month has been generally hot and dry, the total precipitation being 2.03 inches. This is a little above normal, but there has been no precipitation since the first week of the month. In the central part of the Judith Basin the weather has been dry, but in the sections closer to the mountains there has been more rain and crops are in good condition. Severe hailstorms have injured crops.

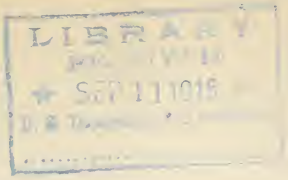
The eighth Annual Farmers' Picnic was held at the Substation on July 28. The attendance was estimated at 2,500 to 3,000; from 400 to 450 automobiles were on the ground at one time. Governor Stewart and Dr. E. C. Elliott, the new chancellor of the University of Montana, were the principal speakers.

OREGON:

Harney County Dry-Farming Substation (Burns). Aug. 1. Spring rye, Sixty-Day oats, and White Smyrna barley are ripening rapidly. Spring-sown crops will

yield better than last year, but the fall-sown cereals are not so good. The earlier varieties of field peas are ready for harvesting. Red spiders attacked the field peas during the last week in July, injuring an area of 8 acres to such an extent that the peas had to be harvested for hay. The pest now seems to be under control, except in the plats on the rotation series where it is desirable to harvest the peas for grain. Maximum temperature for the month of July, 89 degrees; minimum, 32 degrees; mean, 59.1 degrees; precipitation, 0.84 inch; evaporation, 8.342 inches; average wind velocity, 4.6 miles per hour.

There was an attendance of about 300 on Farmers' Day at the Substation on July 22.



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August 18, 1916.

OFFICE NOTES.

Galley proof of Department Bulletin No. 400, "Experiments with Marquis Wheat," and Farmers' Bulletin 756, "Culture of Rye in the Eastern Half of the United States," was read during the week.

Farmers' Bulletin 749, "Grains for the Montana Dry Lands," by N. C. Donaldson, was issued August 12, 1916.

Dr. Humphrey left in the afternoon of August 18 for points in Pennsylvania, Wisconsin, Minnesota, North and South Dakota, Iowa, Illinois, Indiana, and the southern states in the interests of cereal disease work.

Crop Conditions in Illinois and Iowa.

Under date of August 12, Mr. Warburton writes as follows:

"A daylight trip across Illinois and Iowa today shows crops to be in excellent condition. Corn is well advanced and gives promise of a large crop.

Pastures and meadows have been much improved by recent rains. From the thickness of the shocks in the fields, the oat crop is very heavy, but the yield may be lighter than appearances indicate because of hot, dry weather during July while the crop was maturing. Thrashing is in progress, but was stopped today by a rain which seemed to be general in Iowa."

FIELD NOTES.

VIRGINIA:

Arlington Farm. Aug. 17. The work of thrashing winter-wheat varieties and selections has been finished. All the thrashing is now finished and the work of fanning and cleaning cereal varieties is in progress. Much of the grain was discolored and spoiled by the excessively wet weather during the harvesting and thrashing season. Maximum temperature for the month of August to date, 97 degrees (Aug. 6); minimum, 53 degrees (Aug. 14); precipitation, 1.17 inches. Total precipitation for the month of July, 6.18 inches, which is 1.68 inches above normal.

TEXAS:

Amarillo Cereal Field Station. Aug. 12. The weather continues dry and warm with an occasional very small local shower. Crop growth is practically at a standstill; prospects for a row crop are rather doubtful. All the small grains, both in the nursery and on field plats, have been thrashed, with the exception of oats on a few field plats. Yields will be very low.

Mr. H. P. Gould, of the Office of Horticultural and Pomological Investigations, inspected the fruit trees, which he found in good condition. Fruit and forest trees, as well as ornamentals, have made excellent growth this year in spite of the drougth.

WYOMING:

Cheyenne Experiment Farm (Archer). Aug. 12. The work of harvesting spring wheat and mid-season oat varieties is in progress. Rust has not damaged wheat very much. All spring wheats, including the durum varieties, are filling well. A heavy rain and hail storm on August 8 damaged wheat somewhat, the oats, however, being badly shattered. The damage to all but one or two of the very late varieties will range from 45 to 50 per cent. Peas harvested the day before were also badly shattered. The leaves of corn and sorghum were severely stripped and split, but both probably will recover and produce a fair crop. Proso and other millets escaped with but slight injury and are now making rapid growth. Practically all varieties of corn have begun silking; many have begun to set ears.

Maximum temperature for the past week, 85 degrees; minimum, 51 degrees (Aug. 9 and 10); precipitation, 2.80 inches.

SOUTH DAKOTA:

Bellefourche Experiment Farm (Newell). Aug. 14. The sorghums have begun to head and the prosos are ripening, while practically all of the other grains are now fully ripe. Field work was prevented about half the time during the week by showers, but nearly 200 plats were harvested and a few nursery rows were cut. Maximum temperature, 96 degrees; minimum, 46 degrees; precipitation, 1.22 inches.

NORTH DAKOTA:

Dickinson Substation. Aug. 14. Harvest is now in progress in this section. Marquis wheat is nearly all ripe and much has been harvested. It is considerably affected by black stem rust. Yields of late-sown Fife and Bluestem wheats will be much reduced by this cause and the durum varieties are more affected than last year, although less than other spring wheats.

It was observed during a short trip among the wheat fields of this vicinity that the percentage of rust infection for the different groups of wheat is about as follows:

Fife (including Marquis)	40 to 50 per cent
Bluestem	65 " "
Durum	10 to 25 " "

Maximum temperature for the past week, 87 degrees; minimum, 41 degrees; precipitation, 0.03 inch. The cool weather delayed the ripening of grain.

Mr. J. Allen Clark spent the latter half of the week at the Substation.

Northern Great Plains Field Station (Mandan). Aug. 14. White Russian oats and Kubanka and Arnautka wheats, the only cereals remaining in the varietal test, were cut during the early part of the week. All the flax on the Dry-Land Agriculture Investigations plats, with the exception of one plat, has been cut; about half of that grown in the replicated varietal tests has been harvested; and some of the nursery rows have been pulled. Maximum temperature for the week, 75 degrees (Aug. 9); minimum, 40 degrees (Aug. 13); precipitation, 0.08 inch.

Mr. J. Allen Clark inspected the cereal work on August 8 and 9.

Williston Substation. Aug. 12. All small grains have ripened and nearly all have been harvested. Flax is nearly ripe. The weather of the past two weeks has been very favorable for the development of stem rust of wheat; the damage is the most serious since 1908. Fortunately little damage has been done to the wheat on the substation, except that seeded on May 15, the grain of which is rather badly shriveled.

During recent trips in the farming districts north and south of Williston and in Sheridan and Richland counties in Montana, large numbers of wheat fields were observed so heavily infected with stem rust that

they presented a decidedly dark brownish color. Most of the Marquis wheat had ripened and escaped any serious damage; but that seeded later than the middle of May appeared to be as badly affected as the ordinary Fife or Bluestem. Little of the ordinary Fife and Bluestem wheats has escaped serious injury, the only exception being that seeded on light soil in April or the first part of May, as in the case of that on the Substation, in which wheat the damage is but slight. All durum varieties are still in the milk stage and as yet are but slightly infected. Maximum temperature, 87 degrees; minimum, 38 degrees; precipitation, 0.02 inch.

UTAH:

Nephi Substation. Aug. 13. The work of harvesting small grains, both winter and spring, was finished on Aug. 9. Row crops were benefited by the recent thunder showers. Thrashing winter-wheat varieties was begun August 11, the yields ranging from 3.8 to 23 bushels per acre. The low yields of the winter-wheat varieties are largely due to very poor stands and heavy weed growth.

Several header outfits are at work on the Levan Ridge and it is expected that the entire winter-wheat crop will be in the stack in a few days. Weather conditions of the past week have been favorable for harvesting operations.

OREGON:

Eastern Oregon Dry-Farming Substation (Moro). Aug. 5. All winter grains and most of the spring grains have been cut. Farmers have begun to thrash, but showers during the past three days have delayed the work. Yields of 30 to 40 bushels per acre are being obtained.

The weather during the month of July was exceptionally cool. There was only one day with a maximum

temperature exceeding 90 degrees. The cool weather has continued so far during the month of August. The precipitation for July was 0.92 inch, the highest recorded at the Substation for the month of July. Of this, 0.85 inch fell on July 15 and 16.

Harney County Dry-Farming Substation (Burns). Aug. 12. The weather remains dry and hot, A hail storm on August 4 damaged all the uncut two-rowed barleys, as well as the oats and spring wheat. The work of thrashing cereals on the cultural and rotation plats on dry land is practically finished. Yields will average about 10 bushels per acre. Very plump grain has been produced on the plats where the seeding was thin. Winter-wheat varieties have not yet been thrashed.

In the vicinity of the Substation thrashing has been begun. It is expected that the yields will range from 8 to 12 bushels per acre. Better yields are reported from a few farms, but these are located in the best soil area. Farmers on irrigated land in this section are doubling their acreage of alfalfa for seed. Prices for seed remain good and yields can be secured each year if proper care is taken.

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August 25, 1916.

OFFICE NOTES.

Mr. Carleton left Washington on August 21 for points in Wisconsin, Minnesota, Ohio, Illinois, New York, and Pennsylvania in the interests of general cereal investigations.

Mr. Stoa, of Agricultural College, N. Dak., has called attention to a new machine, the Hoiland Wild Oat Separator, which is mentioned here simply that those who are interested may investigate it and determine its value for themselves. The machine is designed by a farmer, Mr. Albert Hoiland, Fargo, N. Dak. It has been demonstrated at several recent fairs and appears to be recommended by two or three men connected with experiment stations. (M.A.C.)

New Rye Variety, "Advance" S. Dak. 1030.

Mr. Champlin writes as follows from Brookings, S. Dak.: "We have decided to name the new variety of rye which we have originated at Highmore the "Advance" S. D. 1030. We have 30 bushels of this for distribution this season. It is a selection of the Dean, descended from a single plant which I selected in 1911."

Mr. J. A. Clark of the Office of Cereal Investigations, after extensive travel in the spring wheat states, writes under date of August 14, as follows:

"From my travel in Wyoming, Colorado, Nebraska, Minnesota, and North and South Dakota I have observed the general condition of the spring wheat crop as follows: Wyoming and Colorado were dry, the spring wheat was short and was maturing prematurely. Isolated patches were also being damaged by gophers and rabbits. I observed a considerable acreage of spring wheat in Nebraska, mostly Marquis. Much of this was evidently reseeded winter wheat fields and looked good in comparison with the winter wheat.

Spring wheat in Minnesota, North and South Dakota, looked unusually good up until a month ago when a rust epidemic swept the entire area. Minnesota does not seem to be affected quite as badly as North and South Dakota.

The increase in acreage of Marquis is surprising. At a guess I would say it comprises 50 per cent of all the spring wheat grown. It, however, has been affected badly by the rust and in many places will be discontinued in favor of durum. There will be thousands of acres of Marquis in eastern North Dakota that will not be cut. This is more true of Fife, Bluestem, and Preston. The Bluestem is affected worst. I doubt if one-fourth of the Bluestem acreage is cut.

Durum wheat has withstood the rust fairly well. While a small per cent of the acreage of this wheat will be abandoned, I think the damage will be due as much to scab as rust. There are many places in eastern North Dakota where it will be the only wheat harvested.

A general average of rust infection on the different groups of wheat according to our new scale would be somewhat as follows: Bluestem,

100-per cent; Fife and preston, 65+ per cent;, Marquis 40+ per cent; durum, 25- per cent. The damage to durum wheat in eastern North and South Dakota is greater than in the western part."

FIELD NOTES.

TEXAS:

Amarillo Cereal Field Station. Aug. 21. The drought was broken by a precipitation of 1.20 inches on August 19 and 20. This will be beneficial to the row crop and will make possible the fall plowing. As a result of the drought crops had ceased growing, many trees were shedding their leaves, and prairie grass was dry enough to burn. Farmers are feeling more encouraged since the rain.

OKLAHOMA:

Woodward Field Station. Aug. 22. Weather conditions have been very favorable for the broomcorn harvest and the indications are that the brush will be of high quality. Broomcorn in the rate-of-spacing test has been pulled once and is curing well. Most of it will have to be pulled a second time in order to secure comparable yields. In the date-of-seeding test with broomcorn the first two plats have been harvested. The plats seeded on June 1 and 15 will be ready to harvest within five days of each other, while that seeded on July 1 is beginning to head now.

Four plats of grain sorghums in the varietal test have been cut and shocked; these are Kaoliang (C. I. Nos. 171, 293, and 328) and White Kafir (C. I. No. 370). Others soon will be ready to harvest. The yields of the grain sorghums will be near the average yield of the past several years.

COLORADO:

Akron Experiment Farm. Aug. 18. The work of thrashing cereals in the field plats was in progress during the past week. Winter wheat has produced good yields, Kharkov (C. I. No. 1583) and Turkey (C. I. No. 1571) making 31.6 bushels per acre. Spring wheat is poor both in quality and yields. Pelissier (C. I. No. 1584) made the highest yield, or 15 bushels per acre. The highest yield of barley was that of Hannchen (C. I. No. 602), which produced 27 bushels per acre. The oats are not all thrashed, but indications are that they will not yield over 20 bushels per acre. The proso millets are being harvested. Grain-sorghum is beginning to ripen. The second seeding of flax in the date-of-seeding test is beginning to ripen.

WYOMING:

Cheyenne Experiment Farm (Archer). Aug. 18. During the past week the work of harvesting was somewhat delayed by rain. All the durum wheats in the varietal and increase plats and all except a few of the Bluestem and Fife wheats have been harvested. Several of the midseason oat varieties were cut early in the week. In the nursery, all varieties of barley, most of the oats, and quite a number of common spring wheats have been harvested. Several varieties of flax are ripe, while the remainder are maturing rapidly. Grain-sorghum is beginning to head. Maximum temperature for the past week, 84 degrees; minimum, 51 degrees (Aug. 17 and 18); precipitation, 0.48 inch.

SOUTH DAKOTA:

Bellefourche Experiment Farm (Newell). Aug. 21. During the past week, the work of harvesting the remaining cereals on the plats and rows was finished. A few of the grains are not yet ripe. All of the heads in the classification nursery have been gathered.

In the vicinity of the Farm harvesting is practically finished. Wheat is very poor because of damage by rust.

Highmore Substation. Aug. 21. Until today the weather has been fairly favorable for field work and thrashing. A light shower on August 14 prevented field work, but since August 19 there has been a precipitation of 3.12 inches. There was very little runoff as a result of this rain and the fields will be in excellent condition for fall plowing.

In the early-seeded rotation plats the yields of Kubanka are from 15 to 20 bushels per acre; the March 15 seeding in the date-of-seeding test has yielded 32.5 bushels per acre, weighing 61 pounds to the bushel. The work of thrashing is nearly finished. Yields of all grains except the common spring wheats are good.

Farmers have shown considerable interest in winter wheat and a number will put in a small acreage. Orders are being received at the Substation for seed of Kubanka wheat, because this was the only spring wheat that resisted the attacks of rust.

Agricultural Experiment Station (Brookings). Aug.16. Mr. Champlin writes that the work of thrashing is finished at the Vivian Substation and that at the other points it is well advanced. Most of the rye crop produced at the Vivian Substation was sold to farmers of the immediate vicinity direct from the thrashing machine.

Yields of all early spring crops and winter grain are good. The varieties of common spring wheat are all badly affected by rust. Preston wheat seems to be giving best results among the common spring wheats, being apparently less affected by rust and hot, dry weather during filling time than Marquis, Bluestem, or Fife.

NORTH DAKOTA:

Dickinson Substation. Aug. 19. During the past week the weather has been warm and dry and favorable for harvesting. The cereals on the varietal plats have been harvested, with the exception of four durum varieties, emmer, proso, and a few late oat varieties. In the nursery all grains have been cut, with the exception of prosos, grain-sorghum, and some wheat in head rows. Maximum temperature for the past week, 91 degrees; minimum, 42 degrees; precipitation, 0.01 inch.

The following were visitors at the Substation during the past week: Director Thomas J. Cooper and Mr. Arnold Christensen, of the North Dakota Agricultural Experiment Station; and Messrs. Chas. H. Clark and Theodore Stoa.

Northern Great Plains Field Station (Mandan). Aug.21. All of the flax, with the exception of that seeded on June 1 and later, has been cut and many of the nursery rows have been pulled.

All of the oats have been thrashed. The following table gives the yields in the varietal test, taken from an average of four 1/55-acre replications:

C.I.No.	Name	Bushels of grain per acre.	Straw in lbs. per acre.	Pounds per bushel of grain.
165	Sixty-Day	41.7	1375	33.0
134	Swedish Select	33.7	1930	38.5
560	Victory	41.4	2260	40.0
656	Early Mountain	43.2	1925	39.8
493	Golden Rain	41.3	2090	39.3
744	White Russian	40.0	2140	38.9

It should be noted that the Early Mountain not only yielded considerably more than Sixty-Day but also averaged 39.8 pounds per bushel as compared with 33 pounds per bushel of the Sixty-Day.

Maximum temperature for the past week, 90 degrees (Aug. 17); minimum, 51 degrees (Aug. 20); precipitation, .09 inch.

Mr. Stoa arrived on August 16 and on the 18th left with Mr. C. H. Clark to visit points in North Dakota, Montana, and Oregon in the interests of flax investigations.

Williston Substation. Aug. 19. The work of harvesting small grains is finished. Some winter wheat has been seeded, but the ground is too dry for good germination.

Considerable wheat has been cut by farmers in the vicinity. Most of this is Marquis. The rust situation remains as previously reported. Late-seeded wheat will hardly be worth cutting for seed; this is also true of most of the Bluestem wheat, whether seeded early or late.

J. Allen Clark visited the Substation during the week.

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OFFICE NOTES.

Page proof of Department Bulletin No. 398, Cereal Experiments at the Judith Basin Substation, Moccasin, Mont., by N. C. Donaldson, was read during the week.

Mr. Godfrey left Washington on August 29 to visit points in the southern States in connection with cereal disease investigations.

Mr. Ball reports a very successful 4-day automobile trip on August 9 to 12, inclusive, through the Willamette Valley, Oregon, in company with Mr. L. M. Jeffers of the Portland laboratory of the Office of Grain Standardization. The route was up the west side of the Valley from Portland nearly to Eugene and back down the east side of the Valley.

Eighty-one samples of wheat were collected, representing about 22 varieties, grown under at least 35 different names. One variety, the Kinney, was found under 5 different names. Practically all the lots were heads selected in standing grain or in the shock. At least 5 new varieties were found, these being represented by about 35 of the 81 collections, so that they should be fully understood after growing in the classification nursery next season. These five are:

Golden Cross, awned, with white glabrous glumes and midsized red kernels;
Kinney, awnless, with white glabrous glumes and large red kernels;
Huston, awnless, with white glabrous glumes and midsized red kernels;
Foise, awnless, with brown glabrous glumes and midsized white kernels;
Bluechaff club, awnless, with brown glabrous glumes and midsized white kernels.

The other characters of these varieties fully separate them from any previously in hand. Some of the remaining varieties may prove to be new.

Mr. Ball also makes the following notes on the classification nursery: About 100 varieties have been described from the plats and nurseries at Chico, Cal., and Moro, Oreg. All lots not included in described varieties have been studied and grouped according to their evident relationships in the field so that related varieties will be closely adjacent another season. The material to be included in the 1917 classification nursery is being designated and heads will be retained at the stations for fall sowing, thus insuring early sowing and a better chance for good stands next year. The work of classification is regarded as extraordinarily successful this year and a large number of varieties can be published as a result.

FIELD NOTES.

VIRGINIA:

Arlington Farm. Sept. 1. Cowpeas grown as a green-manure crop on land to be devoted to cereal experiments the coming season have been turned under, and the land is now being prepared for fall seeding.

Maximum temperature for the past two weeks, 100 degrees (Aug. 22); minimum, 56 degrees (Aug. 29); precipitation, 0.93 inch. Total precipitation for the month of August, 2.10 inches.

The following table gives the yield per acre in bushels of the 10 leading varieties of winter wheat:

C. I. No.	Variety	Yield per acre.
1733	Dawson Golden Chaff	26.4 bushels
1945	Lancaster	24.4 "
1923	Fultz	23.7 "
1933	Jones Winter Fife	23.3 "
1915	Purple Straw	23.1 "
2008	Mammoth Red	23.1 "
1942	Bearded Winter Fife	22.9 "
4823	Leap Prolific	22.9 "
3608	(Hybrid)	22.1 "
4204	Bearded Winter Fife	21.9 "

Yields were much reduced by sparrows while the wheat was in the shock.

WYOMING:

Cheyenne Experiment Farm (Archer). Aug. 25. The first seeding of winter wheat (August 16) in the date-of-seeding test emerged on August 22. The ground is in excellent condition for the seeding of fall crops, due to the abundant late summer rains. The remaining common spring wheat varieties in field plats, and spring emmer in the rate-of-seeding test were harvested early in the week. Alfalfa sown in rows and that seeded broadcast is growing rapidly and may yet make a crop. Maximum temperature for the past week, 82 degrees (Aug. 24 and 25); minimum, 41 degrees; precipitation, 0.39 inch.

Mr. McMurdo was a visitor at the Farm on August 22 and 23.

SOUTH DAKOTA:

Bellefourche Experiment Farm (Newell). Nearly all of the winter grain in field plats was thrashed during the week. Only a few plats and rows remain to be done. Maximum temperature, 90 degrees; minimum, 42 degrees; precipitation, 0.55 inch.

Thrashing has been begun in the vicinity of the Farm. Yields will be very poor. (Aug. 28.)

Highmore Substation. Aug. 26. The work of thrashing is nearly done and will be finished very soon if the present favorable weather continues.

The continued interest of farmers in grains for fall seeding has exhausted the surplus supply of the Substation.

NORTH DAKOTA:

Dickinson Substation. Aug. 28. During the past week the weather has been favorable for the drying of shocked grain. Durum wheat and flax in the varietal tests were harvested. Winter rye and winter wheat were seeded in varietal plats. The work of thrashing will soon begin.

In the vicinity of the Substation early-sown flax is being harvested and good yields are expected. Late-sown flax is beginning to ripen. Cereal crops are nearly all harvested. Several thrashing machines are starting work today.

Messrs. Hungerford and J. Allen Clark visited the Substation during the week.

Northern Great Plains Field Station (Mandan). Aug.28. A large part of the flax in the nursery was pulled during the week and a few more plats were cut. There remain to be harvested only a few nursery rows, the June 1 seeding in the rate-of-seeding test, and the June 15 seeding in the date-of-seeding test. The work of thrashing wheat has been delayed by the wet weather. Kubanka wheat in the Dry-Land Agriculture plats has yielded as low as 15 bushels and as high as 30 bushels per acre. Maximum temperature for the week, 87 degrees (Aug. 24); minimum, 42 degrees (Aug. 29); precipitation, 1.36 inches.

Mr. A. M. Christensen, pathologist at the North Dakota Agricultural College, visited the Station on Aug. 26. Dr. Humphrey arrived today.

Williston Substation. Aug. 26. Winter wheat varieties have emerged. The work of thrashing probably will

not be begun until after the Williams County Fair to be held August 30, 31, and September 1.

Thrashing in the vicinity of the substation has not been begun. Many wheat fields will be left standing for pasture. The weather of the past week continued favorable for corn. Much of the corn will mature if frosts do not occur before the middle of September.

Messrs. Stoa and C. H. Clark visited the Substation on August 20.

Mr. W. H. Peters, of the North Dakota experiment station, and Mr. Ruzicka, superintendent of the Substation, recently purchased a carload of Montana lambs for a feeding trial at the Substation.

UTAH:

Nephi Substation. Aug. 27. During the past week the weather was very favorable for outside work and good progress was made with thrashing, all cereals with the exception of those on the rotation plats and in the nursery being finished. In the varietal test with winter wheat the yields ranged from 2.7 bushels for Turkey (C. I. No. 1756) to 23 bushels for Crimean (C. I. No. 1437). In the varietal test with spring wheat the yields ranged from 5.3 bushels for Defiance to 19.7 bushels for Kubanka. In the varietal test with oats, the yields of the winter varieties ranged from 2.2 bushels of Fulghum (C. I. No. 708) to 16.3 bushels for Winter Turf (C. I. No. 274-20), while the spring varieties yielded from 8.7 bushels for Sixty-Day to 21.9 bushels for Richland (C. I. No. 787). In the varietal test of winter barley the yields ranged from 2.7 bushels for Gatami (C. I. No. 575) to 14.4 bushels for Bulgarian (C. I. No. 521).

In the rate-of-seeding test with winter wheat the highest yields were obtained from the plats seeded at the highest rates. Wheat on fallow land will average about 17 bushels per acre in most of the miscellaneous tests.

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OFFICE NOTES.

Page proof of Department Bulletin No. 400, "Experiments with Marquis Wheat," by Carleton R. Ball and J. Allen Clark, and of Department Bulletin No. 402, "Cereal Experiments at the Akron Experiment Farm, Akron, Colo." was read during the week.

Mr. C. W. Warburton returned on September 4 from his trip to Aberdeen, Idaho, and other western points.

Mr. Carleton returned on September 5 from his trip to points in Minnesota, Wisconsin, Illinois, Ohio, and New York, and to Toronto, Ont., to consult with station officials and to investigate the macaroni industry.

On account of the serious rust epidemic much time was spent in planning future lines of work in Minnesota for the study of cereal rust.

At Toronto a new kind of macaroni was found on the market. This is made of durum wheat, with milk as an important constituent.

FIELD NOTES.

KANSAS:

Hays Branch Experiment Station. Sept. 2. The wheat crop in western Kansas was variable, some fields yielding as high as 40 bushels and others not being worth harvesting. The poorest fields were due to insect (Hessian fly) injury, the damage from this cause being especially severe in the south half of Rooks County and in northeastern Ellis County. The older infested district comprising the south central counties of the State again suffered severely and much of the infested land was plowed and planted to corn and kafir.

A very good crop of wheat is reported in Trego and Gove counties (west of Ellis). All the heavy yields reported were obtained from fields that were prepared early and well, while the low yields and total losses were recorded where the land was poorly prepared or where stubbling in has been practiced.

So little rain has fallen since harvest that there is very little volunteer wheat, and it is thought that the danger from the Hessian fly during the coming year will be slight. The farmers have made an extra effort to plow and prepare the land for wheat and where it has been impossible to plow they have resorted to disking.

The station made an average yield of 24 bushels of wheat per acre from 550 acres, with a high yield of 37.5 bushels and a low yield of 11.5 bushels. Ellis County will probably average 12 bushels per acre.

The official weather records show a total rainfall for July of 0.30 inch, and for August, 1.97 inches. The heaviest fall on any one day was 0.75 inch; most of the rain has been in the form of light showers which have been of little or no benefit. Row crops have suffered intensely from the dry weather. Corn is only fit for stover or silage and the sorghums have made very poor growth. They will yield very little grain for feeding purposes.

Numerous large delegations of farmers have visited the station during the past summer. In addition, from 6 to 15 auto parties each week have made more or less of a study of the work that is being conducted here.

The scientific staff of the station has been in demand for institute work in the county and for various campaigns among the farmers. District, county, and local fairs are becoming popular. Trego County is preparing for a county fair and the Golden Belt Fair Association has been organized to hold a district fair at Hays. About $15,000 will be expended on the fair grounds and an effort is being made to interest all of the farmers of western Kansas.

NORTH DAKOTA:

Dickinson Substation. Sept. 4. The weather during the week has been dry and favorable for thrashing, which began in the vicinity of the substation during the week. Marquis wheat is yielding from 8 to 15 bushels per acre and barley as high as 35 bushels. Many farmers are stacking their grain and some fall plowing is being done. Thrashing at the substation will begin this week.

Winter rye varieties sown on fallow have emerged with good stands. The varieties of winter wheat sown at the same time in standing corn and in stubble has not yet emerged because of the dry condition of the ground. The winter wheat nursery was sown during the week.

The maximum temperature for the week ending September 4 was 97 degrees (Sept. 3); minimum 43 degrees (Sept. 4). No precipitation.

IDAHO:

Aberdeen Substation. The report of conditions at this station under date of August 12, which appeared in the Cereal Review of August 18, page 146,

was credited by error to the Harney County Dry-Farming Substation, Burns, Oreg.

OREGON:

Harney County Dry-Farming Substation (Burns). The report from this station which appeared in the Cereal Review of August 18, page 146, was in reality a report from the Aberdeen Substation, Aberdeen, Idaho, having been credited to the Harney County Dry-Farming Substation by error.

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OFFICE NOTES.

Mr. B. E. Rothgeb returned to the Office on September 11 from an extended field trip.

Mr. C. R. Ball returned to the Office on September 12 from his field trip to California, Oregon, Idaho, and other western States in the interest of western wheat investigations.

Mr. Charles E. Chambliss left on September 12 for points in Louisiana, Texas, and California in the interest of rice investigations. He will return about November 1.

Mr. J. Allen Clark returned to the Office on September 15, after an absence in the field of almost four months in the interest of western wheat investigations.

Galley proof of Department Bulletin No. 430, Cereal Experiments on the Cheyenne Experiment Farm, Archer, Wyo.", by Jenkin W. Jones, and second page proof of Department Bulletin No. 400, "Experiments with Marquis Wheat", were read during the week.

FIELD NOTES.

OKLAHOMA:

Woodward Field Station (Woodward). Sept. 12. Varietal plats of milo were harvested September 11, good seed heads of each variety being saved. All varietal tests of grain sorghums have been harvested except one plat of shallu and seven plats of kafirs. The broomcorn also has been harvested except the last date-of-seeding plat.

Rainfall at the station for August amounted to 1.02 inches; from September 1 to 12, 1.87 inches.

WYOMING:

Cheyenne Experiment Farm (Archer). Sept. 8. Thrashing cereal field plats, except flax, has been completed and a portion of the nursery plats have been thrashed. The flax varieties which were ripening rapidly and uniformly during the first week in August have made considerable late-season growth which has delayed harvest. There are a number of green bolls in all varieties. The plats in the varietal and rate-of-seeding tests with winter wheat were seeded September 7 and 8, and seeding of increase plats is in progress.

SOUTH DAKOTA:

Bellefourche Experiment Farm (Newell). Sept. 11. Thrashing in the vicinity of Newell is fully under way. Wheat yields are low. On the station all the cereal plats have been thrashed except three which have just been harvested. All the nursery rows have been harvested except three which were seeded late. Yields of wheat and flax are rather low.

Maximum temperature for the two weeks ending September 9, 98 degrees; minimum, 46 degrees. Precipitation, 0.05 inch.

SOUTH DAKOTA:

Highmore Substation. Sept. 7. A cloudburst, accompanied by heavy wind, occurred on the 6th, with precipitation of 1.54 inches of rain and hail in about 40 minutes. With the exception of lodging of corn, in places, no serious damage was done, as most of the shock thrashing in this section had been completed.

NORTH DAKOTA:

Dickinson Substation. Sept. 9. Thrashing, which was becoming general in this section, was interrupted by a rain on September 6 (Wednesday). The work was resumed on Friday, but was again interfered with on Saturday by foggy weather. Much of the grain has been stacked, and fall plowing is in progress.

A 3-acre block of Early Mountain oats on the substation is yielding about 50 bushels per acre. These weigh approximately 38 pounds to the bushel.

Maximum temperature for the week, 97 degrees (Sept. 3); minimum, 43 degrees (Sept. 4); precipitation, 0.65 inch. The rainfall will aid germination of winter wheat varieties which had not emerged.

Agricultural Experiment Station (Fargo). Thrashing is completed on the station except a portion of the flax. Wheat in the vicinity of Fargo is of very poor grade and the yields are low. The average yield of bluestem wheat on the station was about 9 bushels, weighing about 40 pounds per bushel. Corn looks well now and the indications are that a good crop will mature.

Northern Great Plains Field Station (Mandan). Sept. 9. Mr. Charles H. Clark returned to the station September 1.

Four replications of the wheat, barley, and flax varieties, and all of the flax from the date-of-seeding and rate-of-seeding tests have been thrashed, but yields have not yet been determined. One replication of each variety was left to be thrashed in the small machine, to be used for seeding next year.

Maximum temperature for the week, 90 degrees (August 31); minimum, 42 degrees (September 2). No precipitation.

Sept. 11. Final data for wheat and barley varietal plats are not yet available, but Kubanka appears to be the best wheat for this locality and Hannchen the best barley. Practically all the flax is harvested except that inside the hail shelter, which is very slow in ripening although the covering has been off for some time. Moderate temperatures have prevailed during the week and corn is ripening well.

Maximum temperature for the week 94 degrees (Sept. 4); minimum 50 degrees (Sept. 5); precipitation 0.58 inch.

Williston Substation. Thrashing on the substation is nearly completed. All the flax and a few of the barley plats are still unthrashed. Yields of wheat varieties are as follows:

C.I.No.	Name	Yield per acre bushels	Weight per bushel pounds
4413	Ghirka Spring sel.	40.2	61
2492	Manchuria	39.5	60
1517	Ghirka Spring	37.7	60
3693	Arnautka	37.4	61½
4064	do	37.2	63
1570	Taganrog	37.2	62½
4063	Kubanka	37.2	63
4324	Pioneer	36.7	61
1440	Kubanka	36.0	63
3641	Marquis	35.0	59
3698	Preston	35.0	60½
3081	do	35.0	60
2827	Polish	34.7	60
3697	Power (N.D.No.313)	31.8	59
3694	Red Fife (N.D.No.646)	30.5	55
4323	Prelude	29.5	61½
2873	Glyndon (Minn.No.163)	29.0	55½
3083	Dakota Bluestem (N.D.No.316)	28.5	53½
2874	Haynes (Minn.No.169)	28.4	53
3703	Defiance	26.0	51

Good stands of winter wheat have been obtained in plats and rows seeded on August 15. Beloglina winter wheat is to be sown on both ridged and unridged ground at intervals of two weeks, commencing August 15.

Precipitation for August, 2.45 inches, 0.87 inch above the 36-year average; precipitation from September 1 to 9, 0.34 inch. A slight frost occurred August 27, but no damage was done to corn.

OREGON:

Eastern Oregon Dry-Farming Substation (Moro). Sept. 6. Thrashing is in progress and yields are considerably higher than was anticipated. In the rotation experiments, Early Baart wheat yielded from 32 to 47.8 bushels per acre; White Smyrna barley from 52 to 78.5 bushels per acre; and Sixty-Day oats from 65 to 80 bushels per acre. In the trilocal experiment with Turkey winter wheat the following results were obtained:

Moro seed,	53	bushels per acre
Montana seed,	49.0	do
Utah seed	46.5	do

In the winter wheat varietal test all those of the Turkey group exceeded 50 bushels per acre in yield, the highest being Armavir, C. I. No. 1355, 55.8 bushels per acre. The lowest yield obtained was from Fortyfold, 38 bushels per acre. All winter wheats are of good quality this year, weighing from 62 to 66 pounds per bushel.

The following were the highest-yielding field peas in the varietal test, which was planted on spring-plowed barley ground:

Carleton,	34.5	bushels per acre
French June	32.2	do
Prince,	31.3	do
Solo,	30.6	do
Gray Winter,	32.2	do
Kaiser,	29.0	do

All thrashing, including the nursery, will be finished next week.

The weather during August was considerably cooler than normal. The only warm weather during the month was from the 23rd to the 30th, when the maximum temperature exceeded 90 degrees. The highest temperature recorded during the month was 98 degrees (August 25); the lowest, 38 degrees (August 18).

Harney Branch Experiment Station (Burns). Sept.5. Thrashing was completed September 4, with the exception of the flax varietal test in rows. Yields of oats and barley were better than expected, but those of wheat, flax and peas not so good. Conditions were unfavorable on account of low temperatures throughout the growing season accompanied with light precipitation in both 1915 and 1916. Frequent frosts reduced yields materially, particularly the frosts of August 18 to 20 when 27 degrees was recorded two nights and 24 degrees one night. Many crops were still immature when these frosts occurred. Alfalfa seed was entirely destroyed, the peas not yet harvested were ruined for seed, and all immature grain was killed. As a result there will be very little wheat fit for milling purposes in this vicinity and all grain crops will be short.

The following data will give an idea of the yields obtained this season:

	Name	C.I.No	Bushels
Winter wheat	Turkey	1558	3.6
Spring wheat	Early Baart	1697	13.4
do	Little Club	4066	8.6
Spring oats	Sixty-Day	165	42.5
do	Canadian	444	21.4
Spring barley	White Smyrna	658	24.0
Field peas	Kaiser		4.0
Alfalfa seed	Martin's (frosted)		0.0
Flax	Select Russian	3	1.0

An acre field of spring rye (S. P. I. No. 26101) yielded 25 bushels, a 2-acre field of White Smyrna barley at the rate of about 45 bushels, and a 4-acre field of Sixty-Day oats at the rate of 40 bushels per acre.

The precipitation during August was 0.33 inch; evaporation, 7.383 inches; average wind velocity, 3.5 miles per hour; maximum temperature, 93 degrees; minimum, 24 degrees.

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OFFICE NOTES.

Mr. Carleton left September 21 for points in the Eastern and Central States to consult with manufacturers and millers on the uses and quality of durum wheat and other cereals, to investigate systems of temperature and humidity control in greenhouses with special reference to cereal-disease investigations, and to consult with station officials with regard to cooperative work.

Dr. H. B. Humphrey returned September 22 from his trip of about five weeks' duration in the Eastern and Central States. On this trip he consulted with experiment station officials regarding the cooperative work with cereal diseases and collected data on the extent of the black rust epidemic.

Mr. C. H. Clark returned on September 22 from a 3-months' trip in the North Central and Western States in the interest of flax investigations. Much of the time was spent in breeding investigations on the Northern Great Plains Field Station at Mandan, N. Dak.

FIELD NOTES.

TEXAS:

Amarillo Cereal Field Station. Sept. 16. Harvesting of the earlier grain sorghums has been begun.

The recent rains have caused the sorghums to make late growth, so that they will be late and uneven in maturing. Good yields will be obtained from some of the milo and feterita plats, but the kafirs are likely to be injured by frost before they ripen fully.

The Panhandle State Fair at Amarillo, which closes today, was a very successful one. The agricultural exhibits were good, considering the season, and more and better livestock was exhibited than ever before.

The past week has been cool, with much less wind than usual. Maximum temperature for the week, 92 degrees; minimum, 40 degrees; precipitation, 1.15 inches (September 10).

OKLAHOMA:

Woodward Field Station. Sept. 18. The dwarf, early, and two plats of standard kafir were harvested on Sept. 16. Indications are that the early kafir will considerably outyield the other varieties this season. Two plats of red kafir, one of African kafir, and one of shallu are yet to be harvested in the varietal test of grain sorghums. The weather is cool and sorghums not yet mature will make slow growth because of the cool nights.

Seed heads have been selected in the broomcorn nursery and counts have been made of the number of good and poor heads in each strain.

COLORADO:

Akron Field Station. Sept. 19. The harvesting for the year was completed last week with the cutting of the grain sorghums. The proso, grain sorghum, and late flax are yet to be thrashed. About one day will be required for this work. With favorable weather the seeding of winter grains in field plats and nursery will be completed this month.

The annual old settlers' picnic was held on Sept. 14. The attendance was about 800, which is much less than the usual number.

The first frost of the season occurred on Sept. 13, when a temperature of 30 degrees was registered.

SOUTH DAKOTA:

Bellefourche Experiment Farm (Newell). Sept. 18. During the week ending Sept. 16 the thrashing of grain from field plats was completed, and the second seeding in the date-of-seeding test with winter wheat was made. Winter wheat sown Sept. 1 emerged promptly, but is not vigorous. The frost on Sept. 15 did considerable damage to the grain sorghums, but did not cause much injury to corn, as that crop was nearly mature. Maximum temperature for the week, 79 degrees; minimum, 28 degrees; no precipitation.

NORTH DAKOTA:

Dickinson Substation. Sept. 16. The work of thrashing on the substation has been delayed by damp, windy weather. Part of the wheat varieties in the field plats have been thrashed, yields ranging from about 8 bushels to the acre from Red Fife to 19 bushels per acre from Kubanka No. 8 (C. I. No. 4063). Two increase plats of Early Mountain oats yielded 60 and 56 bushels per acre, respectively. Marquis wheat on farms in the vicinity is yielding from 10 to 12 bushels per acre, and flax from 10 to 15 bushels per acre.

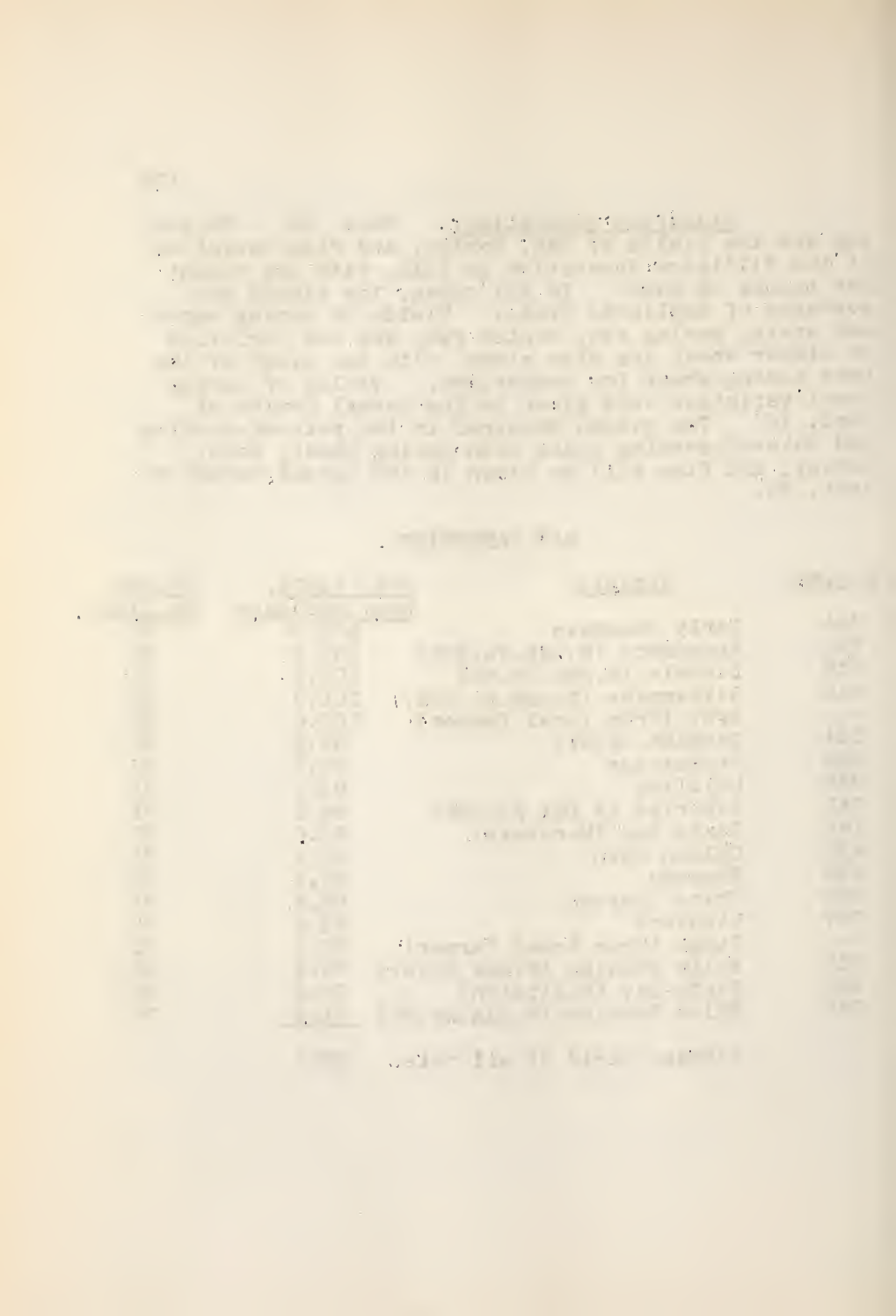
The first killing frost of the season occurred Sept. 14 (temperature 29 degrees), followed by a frost on the 15th (temperature 22 degrees). This frost caused some injury to late-sown flax and to corn and garden truck. Much of the corn is mature enough for seed, but the feeding value of the stover was lowered by the frost. Grain yields of corn will be good.

Maximum temperature for the week, 75 degrees; minimum, 22 degrees; precipitation, 0.02 inch.

Williston Substation. Sept. 18. Following are the yields of oat, barley, and flax varieties at the Williston Substation in 1916, with the weight per bushel of each. In all cases, the yields are averages of duplicate plats. Yields of spring emmer and spelt, spring rye, winter rye, and two varieties of winter wheat are also given, with the yield of the best spring wheat for comparison. Yields of spring wheat varieties were given in the Cereal Review of Sept. 16. The yields obtained in the rate-of-seeding and date-of-seeding tests with spring wheat, oats, barley, and flax will be given in the Cereal Review of Sept. 30.

OAT VARIETIES.

C.I.No.	Variety.	Ave. yield, bus. per acre.	Wt.per bu.,lbs.
754	Early Mountain	105.9	33
731	Abundance (N.Dak.No.966)	103.2	30
738	Lincoln (N.Dak.No.48)	101.9	31
714	Silvermine (N.Dak.No.723)	101.9	32
---	Arnt (From local farmer)	100.6	30
134	Swedish Select	97.8	31
495	Probsteier	95.7	33
736	Hvitling	95.6	35
741	Siberian (N.Dak.No.864)	95.1	31
165	Sixty-Day (Moccasin)	92.6	30
493	Golden Rain	91.9	35
459	Kherson	90.1	33
729	White Kherson	89.4	31
787	Richland	83.8	32
---	Tioga (From local farmer)	83.2	32
732	White Russian (N.Dak.No.51)	78.8	33
165	Sixty-Day (Williston)	78.8	30
744	White Russian (N.Dak.No.54)	71.9	34
	Average yield of all oats,	92.1	



BARLEY VARIETIES.

C.I.No.	Variety.	Ave. yield, bus. per acre	Wt. per bu., lbs.
1116	Tartar	68.3	47
531	Hannchen	65.9	49
893	Proskowetz	63.4	49½
203	Hanna (N.Dak.No.649)	61.7	50
739	Manchuria	58.8	48
888	Oderbrucker	58.3	46
638	Manchuria (N.Dak.No.787)	56.5	48
643	Manchuria (N.Dak.No.792)	56.3	45½
882	Williston No. 170	54.8	48
891	Success (N.Dak.No.171)	53.3	48
187	Svanhals	52.5	47½
---	Tioga (From local farmer)	45.9	43
---	Arnt (From local farmer)	45.4	45
575	Gatami	45.2	50
532	Primus	40.4	50
---	Krogstad	36.3	41
	Ave. yield of all barleys,	54.0	
	Ave. yield of 7 two-rowed,	54.7	
	Ave. yield of 9 six-rowed,	53.4	

FLAX VARIETIES.

133	Moniston	23.1
8	N. D. R. No. 52	21.8
16	N. D. No. 1221	21.3
17	N. D. No. 155	20.7
3	N. D. No. 1215	20.7
12	Primost	18.2
13	N. D. R. No. 114	17.9
30	Smyrna	12.9
	Average yield,	19.9

WINTER WHEAT AND RYE AND SPRING RYE,
EMMER, AND SPELT.

C.I.No.	Variety.	Ave. yield, bus. per acre
3330	Buffum winter wheat,	38.4
1543	Beloglina winter wheat,	34.2
4413	Ghirka Spring wheat,	40.2
----	Winter rye,	35.7
----	Spring rye,	30.9
1524	Spring emmer,	69.5
----	Spring emmer (N.Dak.No.305)	63.8
2968	Spring spelt,	45.3

Northern Great Plains Field Station (Mandan). Sept. 18. The first frost of the season occurred on the night of Sept. 14, killing vegetables and corn. All the flax has been harvested except that in the hail shelter, which did not appear to be injured by the frost. This flax should be ripe enough to harvest by the end of the present week.

Maximum temperature for the week, 78 degrees (Sept. 13); minimum, 23 degrees (Sept. 15); precipitation, 0.05 inch.

THE CEREAL REVIEW

OFFICE OF CEREAL INVESTIGATIONS

BUREAU OF PLANT INDUSTRY.

U. S. DEPARTMENT OF AGRICULTURE.

VOLUME 8.

1916.

September 29, 1916.

OFFICE NOTES.

Page proof of Department Bulletin No. 430, "Cereal Experiments on the Cheyenne Experiment Farm, Archer, Wyo.," by Jenkin W. Jones, was read during the week.

Mr. Stephen Anthony returned on September 28 from a four months' trip through the Western and North Central States. The greater portion of the time was spent at the Aberdeen (Idaho) Substation.

Mr. Alden A. Potter returned on the 25th from a five months' trip in the Great Plains and North Central States, where he conducted investigations for the control of corn smut and studied blast in oats.

Miss Mildred M. Hawxhurst has been appointed, effective September 25, for temporary work in mounting herbarium specimens of cereal varieties.

FIELD NOTES.

VIRGINIA:

Arlington Farm (Rosslyn). Sept. 29. The winter oat nursery was sown September 26 and 27. Seeding of winter oat varieties in field plats was begun on

September 28, but could not be completed today on account of rain.

Maximum temperature for the two weeks ending September 27, 87 degrees (Sept. 14, 27); minimum, 41 degrees (Sept. 20); precipitation for the month to date, 2.47 inches.

WYOMING:

Cheyenne Experiment Farm (Archer). Sept. 22. The winter wheat in the varietal plats sown September 8 and 9 has emerged, and that in the plat sown September 15 in the date-of-seeding test is emerging. The winter wheat nursery was sown September 18 and 19. The harvesting of flax in field plats was completed today, and the flax nursery is now being harvested.

The first killing frost of the season occurred on September 14, when a temperature of 30 degrees F. was recorded. The White Australian flint corn which was grown for silage had not started to glaze when killed by frost, but a fairly good quality of silage is expected. All the corn on the Dry-Land Agriculture plats has been harvested and the harvesting of sorghum varieties is in progress.

SOUTH DAKOTA:

Highmore Substation. Sept. 20. Mr. Morrison attended the South Dakota State Fair at Huron September 11-14, where he talked with many farmers from various parts of the State. He reports that some are practicing the extremely early seeding that the station authorities advocate for wheat, and that these farmers obtained fair yields the past season, though only durum and winter wheats were fair to good in quality, even when sown early. In the eastern third of the State the winter wheat acreage is being increased largely, and comparatively little spring wheat will be sown next year. In the central and western portions of the State, where spring wheat is the principal crop, the proportion of durum to spring common wheat will be greatly increased.

The present indication is that 80 per cent of the spring wheat acreage in these portions of South Dakota next year will be durum, much of it Kubanka. The increase in the durum acreage is due largely to the fact that most of the durum wheat this year graded No. 3, and some of it No. 2, while nearly all of the spring common wheat is sample grade. The recent high price obtained for durum wheat is another incentive to increase the acreage. Mr. Morrison reports that there is increased interest in winter wheat in central and western South Dakota, and that several farmers will try protecting this grain with a mulch of straw or manure, a method which has given promising results at several of the South Dakota stations.

A killing frost on the night of September 14 stopped the growth of corn, but did no injury to winter grains. There is plenty of moisture in the soil generally over South Dakota to give the grain a good start.

NORTH DAKOTA:

Dickinson Substation. September 23. Two replications of each of the cereal varieties have been thrashed in the large thrasher, and the crop from the remaining plat of each is now being thrashed in the small machine for seed. The thrashing of the grain from the Dry-Land Agriculture rotation plats was completed yesterday. The highest yields obtained were as follows: Kubanka wheat after manured corn, 29.2 bushels per acre; Early Mountain oats after fallow, 81.2 bushels per acre; Hannchen barley after fallow, 38.8 bushels per acre.

The weather during the week was favorable for thrashing, except that two days were windy. The maximum temperature was 82 degrees; minimum, 27 degrees; precipitation, trace.

Williston Substation. Sept. 23. Thrashing on the substation is completed except the cereal nursery, half of which is thrashed. The following average yields were obtained from duplicate plats in the rate-of-seeding and date-of-seeding tests with wheat, oats, barley, and flax:

POWER FIFE WHEAT.

Rate-of-Seeding Test.

Rate or date.	Ave. yield, bus. per A.	Wt. per bu., lbs.
3 pecks	31.7	56
4 "	38.7	57
5 "	36.3	57
6 "	38.9	57½

Date-of-Seeding Test.

April 15	32.4	57
May 1	24.5	54
May 15	14.4	47

SIBERIAN OATS.

Rate-of-Seeding Test.

2 pecks	76.3	35
4 "	83.8	34
6 "	76.9	34
8 "	83.1	35

Date-of-Seeding Test.

April 15	80.3	36
May 1	85.0	34½
May 15	73.1	34½

WILLISTON NO. 170 BARLEY.

Rate-of-Seeding Test.

2 pecks	48.2
4 "	57.9
6 "	53.6
8 "	65.2

Date-of-Seeding Test.

Date.	Ave. yield, bus. per A.
April 15	64.0
May 1	59.6
May 15	49.4
June 1	20.4

NORTH DAKOTA NO. 155 FLAX, C. I. NO. 17.

Rate-of-Seeding Test.

1 peck	21.6
2 "	22.4
3 "	23.1

Date-of-Seeding Test.

April 15	22.9
May 1	21.5
May 15	21.3
June 1	22.5

Thrashing is well advanced in the vicinity of the station. Yields ranging from 14 to 25 bushels of wheat per acre have been reported from a few fields. In all cases these yields have been obtained from durum and from early-sown Fife or Marquis. Yields of oats and barley are generally good.

On the 17th a temperature of 29 degrees was recorded, and on the 22d a minimum of 22 degrees. Precipitation since September 1, 1.53 inches.

UTAH:

Nephi Substation. Sept. 23. The thrashing and grading of all fall cereals is completed. The fall soil-moisture determinations were completed on September 12. The fallow ground was dry to a depth of about 8 inches, below which there is a fair supply of moisture.

Practically all the land is ready for fall seeding, but there is not enough moisture in the surface soil for germination. Seeding is being delayed until moisture conditions are more favorable. Precipitation since September 1, 0.5 inch.

OREGON:

Eastern Oregon Dry-Farming Substation (Moro). Sept. 18. The thrashing of the nursery will be completed on the 20th. Weather conditions have been excellent for thrashing during the past two weeks.

THE CEREAL REVIEW

OFFICE OF CEREAL INVESTIGATIONS

BUREAU OF PLANT INDUSTRY.

U. S. DEPARTMENT OF AGRICULTURE.

VOLUME 8.

October 13, 1916.

OFFICE NOTES.

Beginning with this issue the "Cereal Review" will appear biweekly until further notice.

Galley proofs were read during the week of October 2 of Department Bulletin No. 450, "Improvement of Ghirka Spring Wheat in Yield and Quality," by J. Allen Clark; Farmers' Bulletin 768, "Dwarf Broomcorn," by B. E. Rothgeb; and Farmers' Bulletin 769, "Growing Grain on Southern Idaho Dry Farms," by L. C. Aicher.

Department Bulletin No. 402, "Cereal Experiments at the Akron Field Station, Akron, Colo.," by Geo. A. McMurdo, was issued on October 3, 1916.

Farmers' Bulletin 756, "Culture of Rye in the Eastern Half of the United States," was issued October 11, 1916.

Mr. Chas. H. Clark, in charge of flax investigations, states that samples from flax grown in nursery rows will not be needed for oil analysis this fall. He desires, however, pound samples of varieties grown in field plats when he advises as to the particular varieties needed. This note does not apply to the stations growing flax in the Southwest.

Attention is again directed to Order No. 9887 issued by the Postmaster General under date of August 18, 1916. The following memorandum from the Chief Clerk of the Department of Agriculture, together with a copy of Order No. 9887, was recently sent to the field men for their information and guidance:

September 21, 1916.

MEMORANDUM FOR THE CHIEF CLERKS OF THE VARIOUS BUREAUS, DIVISIONS AND OFFICES:

Your attention is further directed to letter of September 16th, enclosing Order No. 9887 issued by the Postmaster General, under date of August 18th. The Third Assistant Postmaster General has advised this office that when packages of merchandise or similar matter exceed four pounds in weight, the postage on the entire weight must be paid. This ruling does not apply, however, to printed or written matter described in Paragraph 2 of the order, when shipped from Washington, D. C.

As the appropriation for postage will be insufficient to meet the extra burden placed upon it by this order, the executive officers of each bureau, division and office should instruct employees concerned to divide heavy consignments, whenever possible, so as to come within the weight allowed to be mailed under the penalty privilege. All packages weighing over four pounds should be shipped by either express or freight.

Respectfully,

(Sgd.) R. M. REESE

Chief Clerk.

FIELD NOTES.

VIRGINIA:

Arlington Farm. Oct. 12. Winter oats and barley seeded in field plats and in the nursery during the latter part of September have emerged and are making good growth. Winter wheat sown in the nursery and in field plats early in October is beginning to emerge. At the time of seeding soil conditions were favorable, but rain is much needed now.

Weather conditions during the past two weeks have been generally fair. The first fall frost occurred on Oct. 11. Maximum temperature, 89 degrees (Oct. 8); minimum, 34 degrees (Oct. 11); precipitation, 0.52 inch (Sept. 29 and Oct. 9).

GEORGIA:

State College of Agriculture (Athens) Oct. 9. Seeding of winter oats was begun today. Although there was no precipitation in September, there probably is enough moisture in the soil to germinate the oats.

WYOMING:

Cheyenne Experiment Farm (Archer) Oct. 7. During the past two weeks stands of winter wheat have been counted in field plats and in the nursery. Uniformly good stands were recorded in the field plats, while in the nursery stands have been injured slightly by rodents. Flax in the field plat tests has been thrashed. Machine thrashing is now finished, with the exception of several oat plats which were harvested recently.

SOUTH DAKOTA:

Oct. 9.

Bellefourche Experiment Farm (Newell)./ During the past three weeks the sorghums have been harvested. The work of thrashing the nursery plats is half done; fall plowing of grain stubble is finished; and most of the seeding is done on the dry-land grain plats. A precipitation of 0.76 inch in the form of rain and snow on Oct. 7 and 8 ended the drought which had existed since August 20. The resultant moisture should be sufficient to germinate all fall-seeded grain.

NORTH DAKOTA:

Dickinson Substation. Oct. 2. A snowfall of several inches on Oct. 1 interrupted the work of thrashing on the field plats.

The following yields have been obtained from wheat, oats and rye in the varietal plats. The yields of spring wheat and oats are the averages from 3 plats; those of winter wheat and rye have been computed from single plats.

Spring Wheat

C. I. No.	Variety	Yield per acre, bushels
3320	Bolley D. No. 1	26.2
4063	Kubanka	17.4
1440	Kubanka	16.6
4324	Pioneer	15.0
4064	Arnautka	14.6
3641	Marquis	13.5
4323	Prelude	12.4
4414	Ghirka No. 5	10.0
3315	Huron	9.5
4427	Ghirka No. 72	9.4
3081	Preston	8.3
4425	Ghirka No. 66	8.0
1517	Ghirka	7.6
4413	Ghirka No. 4	7.3
3697	Power	6.7
3329	Red Fife	6.4
2873	Glyndon (Minn. No. 163)	5.5
3022	Rysting	4.5
3314	Crossbred	3.8
2874	Haynes (Minn. No. 169)	3.1

Winter Wheat.

1571	Turkey	22.8
1543	Beloglina	18.7
3084	N. Dak. No. 1997	16.3
1583	Kharkov	16.3
3330	Buffum	14.2
4063	Kubanka (check)	20.3

Average of 4 durum varieties.....	18.7 bus.
Average of 5 winter varieties.....	17.7 "
Average of 4 bearded common varieties.	11.3 "
Average of 10 Fife varieties.....	7.9 "
Average of 2 bluestem varieties.....	3.5 "

Oats

C. I. No.	Variety	Yield per acre, bushels
731	Abundance	86.0
560	Victory	79.2
741	Siberian	79.2
659	Silvermine	78.3
658	Big Four	75.7
134	Swedish Select	75.0
656	Early Mountain No. 2	74.7
165	Sixty Day	74.3
551	White Russian	74.0
787	Richland	73.6
169	Golden Beauty	71.0
493	Golden Rain	66.8
459	Kherson	66.8
729	Kherson Sel. (Iowa No.103)	65.8
358	----------	63.5
445	White Tartarian	62.8
354	----------	56.2
160	Banner	54.3
449	----------	42.0

Average of 8 midseason white varieties.	75.3
Average of 2 late varieties.....	68.4
Average of 4 early varieties.....	70.1
Average of 5 midseason yellow varieties	59.9
Average of all oat varieties.....	69.4

Winter Rye

C. I. No.	Variety	Yield per acre, bushels
175-5	N. Dak. No. 959 Sel.	43.9
175	N. Dak. No. 959 "	38.4
174	Green Seeded (von Rümker)	23.7
173	Yellow Seeded (von Rümker)	10.5

Spring Rye

169	Spring	21.6

Maximum temperature for the month of September, 97 degrees; minimum, 22 degrees; precipitation, 0.71 inch.

During the week Prof. L. R. Waldron, Plant Breeder at the N. Dak. Experiment Station, visited the Substation.

October 9. The work of thrashing is being continually interrupted by rain, snow, and wind. In the vicinity of the Substation thrashing is well advanced, with the exception of stacked grain. Reports of high yields of flax continue to come in; most fields apparently are yielding from 10 to 18 bushels per acre. As a result a large acreage of flax probably will be sown next year.

Maximum temperature for the past week, 71 degrees; minimum, 21 degrees; precipitation, 0.90 inch.

Agricultural Experiment Station (Fargo). Oct. 7. The first killing frost of the season in this locality occurred on Sept. 28. Most of the corn was so nearly ripe that it was not much injured. In spite of the unfavorable spring, the corn crop will be equal to, or better than, the previous average for North Dakota.

The following table gives the average yields obtained this year in the varietal tests with flax:

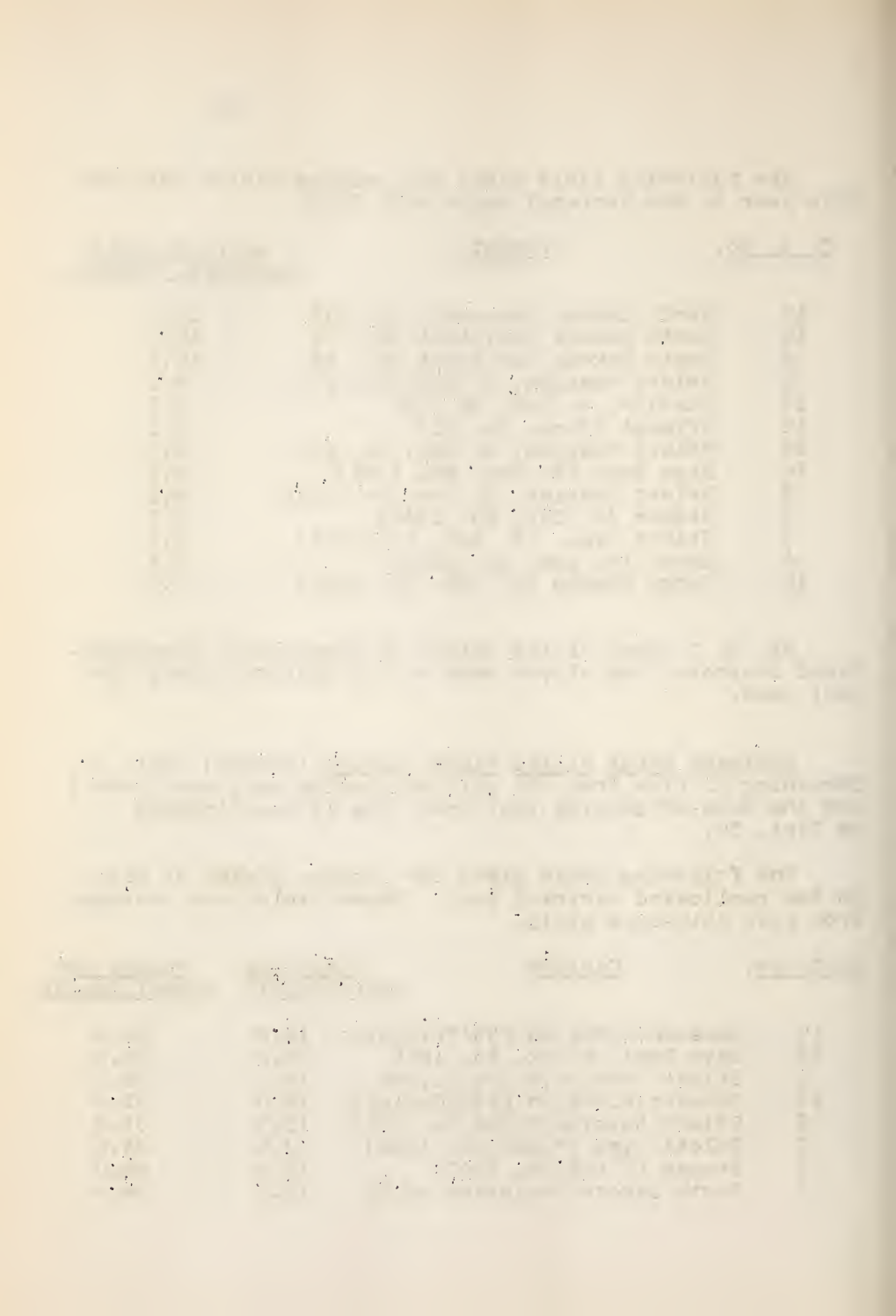
C. I. No.	Variety	Average yield per acre, bushels
13	North Dakota Resistant No. 114	10.6
14	North Dakota Resistant No. 73	10.5
8	North Dakota Resistant No. 52	10.4
1	Select Russian, N. Dak. No. 608	9.3
17	Russian, N. Dak. No. 155	9.2
12	Primost (Minn. No. 25)	9.1
45	Select Russian, N. Dak. No. 609	8.5
16	Hays Seed (N. Dak. No. 1221)	8.4
3	Select Russian, N. Dak. No. 1215	8.2
5	Stepan (N. Dak. No. 1340)	7.7
2	Select Riga, (N. Dak. No. 1214)	7.5
4	Kazan (N. Dak. No. 1329)	7.4
18	Fargo Common (N. Dak. No. 1133)	6.8

Mr. H. S. Coe, of the Office of Forage-Crop Investigations inspected the clover work at the Station during the past week.

Northern Great Plains Field Station (Mandan) Oct. 2. Thrashing of flax from the rate-of-seeding test sown June 1 and the date-of-seeding test sown June 15 was finished on Sept. 30.

The following table gives the average yields of flax in the replicated varietal test. These yields are averages from five 55th-acre plats.

C. I. No.	Variety	Yield per acre, bushels	Weight per bushel, pounds.
17	Russian, N.Dak.No.155(Williston)	14.3	55.5
16	Hays Seed, N.Dak. No. 1221	14.2	55.5
1	Select Russian, N.Dak.No.608	14.2	55.2
19	Russian, N.Dak.No.155(Edgeley)	14.0	55.2
3	Select Russian, N.Dak.No. 1215	13.9	55.2
2	Select Riga (N.Dak.No. 1214)	13.9	55.2
5	Stepan (N.Dak.No. 1340)	13.4	56.0
8	North Dakota Resistant No.52	13.3	54.6



C. I. No.	Variety	Yield per acre, bus.	Weight per bushel, lbs.
4	Kazan (N.Dak.No.1329)	12.9	55.5
14	North Dakota Resistant No.73	12.7	56.9
18	Fargo Common (N.Dak.No.1133)	12.7	55.6
15	Idaho Common	12.5	56.2
12	Primost (Minn. No. 25)	10.0	55.9
47	Primost (Minn. No. 25)	9.4	56.9
13	North Dakota Resistant No. 114	9.3	55.8
24	Ottawa White-Flowering	8.6	55.7
30	Smyrna	3.3	50.9

Maximum temperature for the past two weeks, 85 degrees (Sept. 20); minimum, 29 degrees (Sept. 28); precipitation, 0.29 inch.

Williston Substation. Oct. 7. On account of wet weather considerable grain remains to be thrashed. More stacking than usual has been done, thus preparing for fall plowing, for which the ground is in good condition. A light snow fell on Oct. 2 and 3, but quickly melted.

A pit silo on the Substation has been filled. A large quantity of mature seed corn has been harvested, and potatoes are now being dug.

MONTANA:

Judith Basin Substation (Moccasin) Sept. 26. On a recent trip in eastern Fergus County, Mr. Donaldson observed that because of the winterkilling of fall-sown wheat most of the wheat grown in that locality this year was spring-sown. Many of the farmers stacked their grain. While most of the shock thrashing was finished much stacked grain remains to be thrashed. One farmer had 20 acres of Marquis wheat that yielded 32 bushels to the acre, but the yield in most cases was only from 15 to 20 bushels. The general opinion was that Marquis yielded more than the durum varieties. While most of the farmers are raising wheat, some oats and barley are grown. Quite an acreage of flax was raised, but yields are low because of late seeding.

The acreage seeded to winter wheat in Fergus County is larger than ever before. Nearly 100 per cent more fallow land will be sown to wheat than last year. Most of this seeding has already been done and in many cases the wheat has emerged.

Throughout the Basin the weather has been unusually favorable for thrashing, which probably will be finished in another week. Yields are low, most of the spring wheat yielding about 20 bushels to the acre. Spring wheat is selling from 10 to 12 cents higher than winter wheat.

At the substation thrashing has been finished. Average yields were obtained. The highest yielding varieties were Marquis wheat, White Smyrna (C. I. No. 195) barley, and Swedish Select (C. I. No. 134) oats. A 20-acre increase field of Sixty Day oats (C. I. No. 165) yielded 70 bushels to the acre.

Winter wheat has emerged.

OREGON:

Eastern Oregon Dry-Farming Substation (Moro). Sept.26. All thrashing is finished. The following yields were obtained from spring-wheat varieties in field plats:

C. I. No.	Variety	Yield per acre, bus.	Weight per bushel, lbs.
2346-1	Saumur	47.5	63.5
2827-1	Bobs	45.5	63.0
2495	Talimka	44.6	61.0
2203-2	Koola	44.6	60.0
2404-1	Yantagbay	42.3	62.0
4068	Little Club	42.3	58.0
2407-2	Aulieata	42.0	63.0
1697	Early Baart	41.0	62.0
2669-1	Heine Squarehead	39.8	60.0
2227-1	Chul	39.2	61.5
3036-2	Sonora	38.7	63.5
2200-1	Karun	37.8	65.0
4078	Bluestem	37.3	58.0

Ten spring-wheat varieties were grown in triplicate 2-rod rows to compare the yields with those in the regular varietal test in duplicate twentieth-acre plats. The wheats in rows ranked in the following order: Talimka, Saumur, Chul, Koola, Karun, Early Baart, Marquis, Bluestem, Little Club, Bobs.

The following yields of spring-barley varieties were obtained:

C. I. No.	Variety	Average yield per acre, bushels.	Weight per bushel, lbs.
936	Trebi	95.8	50.0
937	Sandrel	84.2	52.0
927	Odessa	81.7	51.0
926	Horn	79.6	52.0
935	Peruvian	78.0	48.0
626	Coast	72.6	47.0
658	White Smyrna	71.7	52.0
187	Svanhals	71.4	52.0
906	Hanna	69.6	51.0
261	Mariout	69.4	48.0

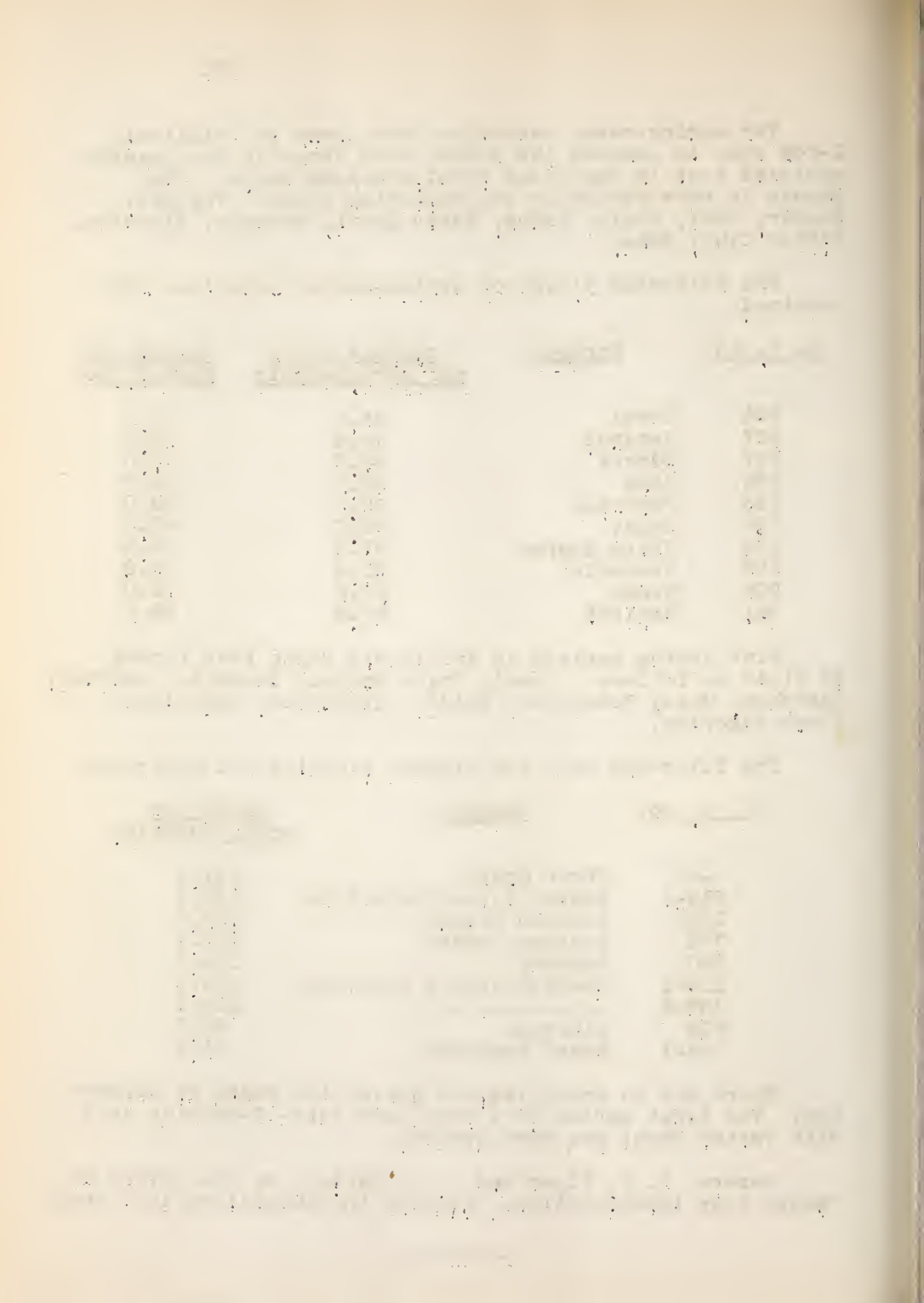
Nine spring barleys in triplicate 2-rod rows ranked in yield as follows: Coast, White Smyrna, Svanhals, Mariout, Hannchen, Meloy Beardless, Beldi, Withycombe, Hull-less, Black Algerian.

The following were the highest yielding oat varieties:

C. I. No.	Variety	Yield per acre, bushels.
---	Three Grain	121.2
519-1	Danish Island selection	110.3
134	Swedish Select	106.0
795	Western Wonder	105.4
560	Victory	104.7
134-1	Swedish Select selection	104.7
357-1	----------	103.1
635	Siberian	98.9
524-1	Great Northern	94.2

There was no precipitation during the month of September. The first series in a rate- and date-of-seeding test with Turkey wheat has been seeded.

Messrs. C. V. Piper and R. A. Oakley, of the Office of Forage Crop Investigations, visited the substation last week.



THE CEREAL REVIEW

OFFICE OF CEREAL INVESTIGATIONS

BUREAU OF PLANT INDUSTRY.

U. S. DEPARTMENT OF AGRICULTURE.

VOLUME 8.

1916.

October 27, 1916.

OFFICE NOTES.

Department Bulletin No. 398, "Cereal Experiments at the Judith Basin Substation, Moccasin, Mont.," by N. C. Donaldson, was issued on Oct. 12, 1916.

Page proof of Farmers' Bulletin No. 768, "Dwarf Broomcorns," by B. E. Rothgeb, and Farmers' Bulletin 769, "Growing Grain on Southern Idaho Dry Farms," by L. C. Aicher, was read during the week of Oct. 16.

Page proof of Department Bulletin No. 450, "Improvement of Ghirka Spring Wheat in Yield and Quality," by J. Allen Clark, was read Oct. 21,1916.

Mr. Carleton left Washington on Oct. 24 to visit points in the northeastern and north and south central States in connection with cereal investigations.

Miss Hudson has been granted leave of absence without pay for three months, beginning Oct. 1, 1916.

Two 4-drawer cabinets for 4 x 6 cards are available for use on field stations. These cabinets, which are in good condition, will be sent on request.

The attention of all employees of the Department of Agriculture is invited to Memorandum No. 177, Office of the Secretary, a copy of which has been sent to each of the field men of this Office.

From Commerce Reports, Oct. 2, 1916, is taken the following information on the Canadian Grain-Crop Estimates:

"It is estimated that of the area sown about 13.7 per cent of spring wheat, 8 per cent of oats, 5 per cent of barley, and 1.8 per cent of flax will fail to produce any crop of grain. Deducting these percentages and a small percentage of grain cut for green feed, it is estimated that the total yield of wheat this year will be 168,811,000 bushels from a harvested area of 10,085,300 acres, as compared with 376,303,600 bushels from 12,986,400 acres last year. The estimate slightly exceeds, however, the crop of 1914, which was 161,280,000 bushels from 10,293,900 acres. The average yield per acre this year is 16$\frac{3}{4}$ bushels, as compared with 29 bushels in the year 1915.

The estimate for oats is a total yield of 341,602,000 bushels from 9,795,000 acres, contrasted with 520,103,000 bushels from 11,365,000 acres in 1915, the average yield per acre this year being 34.88, as against 45.76 in 1915. For rye the estimate is 1,990,800 bushels, as compared with 2,394,100 bushels in 1915, the yield per acre being 19.63 bushels this year compared with 21.32 bushels in 1915. The yield of barley this year is estimated at 34,408,000 bushels from 1,326,800 acres. In the year 1915, 53,331,300 bushels of

barley were produced from 1,509,350 acres. The flaxseed estimate is for 8,625,300 bushels from 710,000 acres, an average of 12.15 bushels per acre.

NEW CEREAL VARIETIES.

The following varieties of cereals have been originated in the cooperative work with the South Dakota station and are now ready for distribution:

Acme durum wheat, S. Dak. No. 284, a rust-resistant, high-yielding selection of Kubanka, C. I. No. 1516, made at Highmore in 1909. Acme durum wheat has been given C. I. No. 5284.

Advance rye, S. Dak. No. 1030, a vigorous-stooling, high-yielding selection from Dean, S. Dak. No. 177, made at Highmore in 1911. This has been given C. I. No. 181.

American kaoliang, S. Dak. Nos. 289 and 655, selections from Manchu Brown, C. I. No. 171-8, made at Highmore. These selections are more uniform in type and in date of maturity than C. I. No. 171-8.

Shelley millet, S. Dak. No. 343, a selection from Kursk millet, made by Wilson G. Shelley at Akron, Colo., in 1909. The Shelley is earlier and more uniform than the original Kursk.

The Acme wheat has been grown at Brookings and Highmore and has been distributed in a very limited way to farmers. A small quantity will be available for distribution in the spring of 1917. Advance rye was distributed for the first time in the fall of 1916. The American kaoliang and Shelley millet have been grown by a considerable number of farmers in South Dakota and by a few in other States.

FIELD NOTES.

VIRGINIA:

Arlington Farm. Oct. 26. Winter wheat, oats, barley and rye in field plats and in practically all of the nursery, with the exception of late seedings, have emerged. The recent rains were of much benefit to cereal crops.

Maximum temperature for the past two weeks, 83 degrees (Oct. 20); minimum, 34 degrees (Oct. 15); precipitation, 1.61 inches.

SOUTH DAKOTA:

Bellefourche Experiment Farm (Newell). Oct. 16. Winter grain seeded on Sept. 27 has emerged. During the past week winter grain was sown on the irrigated plats and about 200 head rows and 250 rod rows of winter wheat selections were sown on the dry land. Thrashing of the nursery is almost finished.

Maximum temperature, 74 degrees; minimum, 29 degrees; precipitation, 0.03 inch.

The following tables show the yields of winter and spring wheat varieties in 1916:

WINTER WHEAT (DRY LAND).

C. I. No.	Variety	Yield per acre, bus.
1442	Kharkov	14.2
1583	Kharkov	13.2
1561	Theiss	12.3
1571	Turkey	12.3
1667	Beloglina	11.7
2979	Alberta Red	11.6
1438	Ghirka	11.1
1558	Turkey	10.3
4207	Kharkov	9.8
3055	Turkey	9.6
2943	Turkey	9.1
2239	Beloglina	7.8

SPRING WHEAT (DRY LAND).

C. I. No.	Variety	Yield per acre, bus.
	Durum:	
1516	Kubanka	19.7
1493	Arnautka	14.8
1440	Kubanka	13.8
1350	Pererodka	13.7
4063	Kubanka	11.0
4064	Arnautka	10.3
	Miscellaneous:	
2492	Manchuria	12.9
4323	Prelude	8.1
2911	Changli	8.0
4935	Huron	5.2
	Fife:	
1517	Ghirka	8.9
3641	Marquis	8.1
3697	Power	6.5
3022	Rysting	4.4
2873	Glyndon	4.1
	Preston:	
4324	Pioneer	6.2
3081	Preston	5.8
	Bluestem:	
2874	Haynes	5.6

SPRING WHEAT (IRRIGATED LAND)

	Durum:	
1440	Kubanka	20.6
	Fife:	
3276	Marquis	9.4
3025	Power	8.4
	Bluestem:	
2874	Haynes	7.3
	Preston:	
4782	Pringle Champlain	6.5
	Miscellaneous:	
3703	Defiance	2.0

NORTH DAKOTA:

Dickinson Substation. Oct. 16. Winter rye is stooling well and has made considerable growth during the warm weather of the past week. Winter wheat sown in corn and grain stubble is thin and uneven because of the dryness of the soil; that sown in the nursery is in good condition.

Thrashing in the vicinity of the Substation is nearly finished, only a little stacked grain remains to be thrashed.

Maximum temperature for the past week, 70 degrees; minimum, 25 degrees; no precipitation.

UTAH:

Nephi Substation. Oct. 22. During the period from Oct. 1 to 16, inclusive, there was a precipitation of 2.54 inches. The excessive moisture made work with teams impossible. Seeding was begun on Oct. 18. All winter wheat and oat varieties have been sown, as well as the grains in the rotation and cultural tests.

Winter wheat seeded in the vicinity of the Substation before the rain has emerged. Farmers were fortunate in getting their grain in before this rain, although that sown now should emerge and get a good start before winter sets in.

THE CEREAL REVIEW

OFFICE OF CEREAL INVESTIGATIONS

BUREAU OF PLANT INDUSTRY.

U. S. DEPARTMENT OF AGRICULTURE.

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November 10, 1916.

OFFICE NOTES.

Department Bulletin No. 400, Experiments with Marquis Wheat, by Carleton R. Ball and J. Allen Clark, was issued on Oct. 26, 1916.

Department Bulletin No. 430, Cereal Experiments on the Cheyenne Experiment Farm, Archer, Wyo., by Jenkin W. Jones, was issued on Oct. 28, 1916.

Second page proof of Farmers' Bulletin 769, Growing Grain on Southern Idaho Dry Farms, by L. C. Aicher, and Department Bulletin No. 450, Improvement of Ghirka Spring Wheat in Yield and Quality, by J. Allen Clark, was read during the week of October 30.

Mr. Chambliss returned on November 1 from his trip through Louisiana, Texas, and California in the interests of rice investigations.

The following is a copy of the Secretary's Memorandum No. 179, regarding attendance at meetings by employees of the Department of Agriculture:

November 3, 1916.

MEMORANDUM NO. 179.

Regarding Attendance at
Meetings by Employees of
the Department.

"In view of the increasing number of requests which the Department is receiving for the detail of employees to attend meetings of various kinds, the following statement is made for the guidance of various bureaus, offices, and divisions of the Department.

1. As a general rule, employees of the Department, other than those stationed permanently or temporarily in localities for the prosecution of official work, will not be authorized to participate in meetings of local importance only.

2. Upon the recommendation of the chiefs of the bureau, office, or division concerned, and in accordance with Paragraph 92 of the Administrative Regulations, the Secretary will decide whether a meeting is of sufficient importance to justify the attendance of an employee. If an employee is detailed to attend the meeting, the Director of Extension in the State in which the meeting is held will be notified of the name of the employee and the subject of his address.

3. As a general rule, the Department, through the State Relations Service, will refer requests for the detail of employees to attend meetings which are of only local importance to the Director of Extension for consideration. He will be requested to use his best judgment as to whether a member of the extension force should be detailed to attend the meetings and to notify the Department of the action taken by him, in order that those who made the requests upon the Department may be advised accordingly.

4. When employees of any bureau, office, or division are detailed to attend any meeting, notice should be sent to the States Relations Service immediately upon the acceptance of the invitation. The notices should give the name of the speaker and the subject to be discussed, in order that the Director of Extension in the State may be notified.

5. This memorandum does not apply to meetings which are regularly planned in connection with the cooperative agricultural extension work. It does not supersede, but supplements, the provisions of Paragraph 92 of the Administrative Regulations.

D. F. HOUSTON

Secretary."

FIELD NOTES.

VIRGINIA:

Arlington Farm. Nov. 10. Weather conditions for the two weeks ending Nov. 8 were generally fair, with slight precipitation. Maximum temperature, 73 degrees (Nov. 2); minimum, 32 degrees (Nov. 4); precipitation, 0.58 inch (Nov. 1).

Early-sown cereal varieties have made good growth and are in fair condition to withstand the winter. Late-sown varieties, however, do not appear to be in such a favorable stage of growth. The soil is quite dry and somewhat parched.

GEORGIA:

State College of Agriculture (Athens). Oct. 16. The cereal experiments carried at Ashburn have been abandoned because of lack of cooperation on the part of the owner of the farm. Arrangements have been made to conduct the work at Tifton, Ga., in cooperation with the Second District A. & M. School. The soil is of the same type as that at Ashburn. As the school is prepared to do the work it is believed that better results will be obtained than at Ashburn.

Bulletin 113 of the Extension Division, Georgia State College of Agriculture, "Oat Production in Georgia," by Ross R. Childs, has recently been issued. This bulletin includes the results of the cooperative work at Athens from 1914 to 1916.

Oct. 24. Seeding of grain in plats at Tifton was begun today.

COLORADO:

Akron Experiment Farm. Oct. 28. Winter wheat has been benefited by a much needed rain. Wheat sown on cropped land has not yet emerged and there is not a good stand on summer fallow. Winter Ghirka sown in the nursery on fallow land has not yet emerged.

Wheat sold at Akron yesterday for $1.55 per bushel.

WYOMING:

Cheyenne Experiment Farm (Archer). Nov. 2. The yields of all small grain crops the past season were very low. Corn and forage crops which were benefited by the rains of late summer and fall produced fair to good yields. Potatoes yielded from 97 to 171 bushels to the acre.

Stands of winter wheat in both field plats and nursery are good and the condition is excellent. The Johannes rye received this year from Arlington Farm, Virginia, and rye in the field are in good condition. Boswell Winter oats seeded on the level in the nursery were almost entirely destroyed by the cold weather from Oct. 18 to 22. Those sown in furrows are still in fair to good condition.

Field work was finished today. The installation of the water supply for the Farm has just been completed.

SOUTH DAKOTA:

Bellefourche Experiment Farm (Newell). Oct. 30. The work of thrashing, cleaning, and testing grain from the nursery rows has been finished. Stands have been counted on all plats where the winter grain has emerged; cool weather has retarded emergence and growth. Wheat seeded on Oct. 12 has not yet emerged.

Maximum temperature for the past week, 68 degrees; minimum, 18 degrees; precipitation, 0.04 inch.

NORTH DAKOTA:

Dickinson Substation. Nov. 6. The work of thrashing is finished with the exception of a portion of the nursery.

The following table gives the yields obtained from barley and flax in the varietal plats. Each variety of barley was replicated three times and each variety of flax twice.

Barley.

C. I. No.	Variety.	Yield per acre bushels.
187	Svanhals	44.8
531	Hannchen	39.8
203	Hanna	39.8
893	Proskowetz	39.4
863	Manchuria	32.5
532	Primus	30.8
907	Steigum	30.1
658	White Smyrna (Ouchac)	27.6
575	Gatami	19.7
932	Mariout	16.7
663	Chili	14.8
262	Nepal (White Hull-less)	23.6*

Average of 2-rowed hulled varieties . . .	36.6
Average of 6-rowed hulled varieties . . .	25.5
Nepal (naked)	23.6*

* Sixty pounds per bushel.

Flax.

C. I. No.	Variety.	Yield per acre bushels.
3	Select Russian, N. Dak. No. 1215	15.4
17	Russian, N. Dak. No. 155	13.9
19	Russian, N. Dak. No. 155	13.2
8	North Dakota Resistant No. 52	12.2
30	Smyrna	11.2
14	North Dakota Resistant No. 73	10.9
12	Primost (Minn. No. 25)	10.7
13	North Dakota Resistant No. 114	5.8
12	Primost (Dickinson)	18.1
12	Primost (St. Paul)	16.9
12	Primost (Highmore)	16.5

Yaroslav emmer (C. I. No. 1526) yielded 51.8 bushels per acre, weighing 40 pounds to the bushel.

Northern Great Plains Field Station (Mandan). Nov. 10. The yields of flax varieties and selections grown in single 1/55-acre plats are shown in the following table. The plats on which the selections were grown were end to end with one of the replicated series, so that they might be directly compared with the original varieties. The selections all yielded slightly more than the varieties from which they were selected, though they were on lighter, poorer soil. They did not germinate so early nor so evenly as the other series and were a week or two later in ripening. Most of the increases are hardly large enough to be significant.

C. I. No. or Selection No.	Variety.	Yield per acre, bus.	Increase over bulk seed.
2-4	Select Riga (N.Dak.No.1214)	11.54	+0.72
3-1	Select Russian,N.Dak.No.1215	12.03	+1.72
4-1	Kazan (N.Dak.No.1329)	12.76	+2.70
5-6	Stepan (N.Dak.No.1340)	12.27	+2.27
8-4	N.Dak.Resistant No. 52	14.20	+4.14
13-1	N.Dak.Resistant No. 114	9.08	+0.52
16-4	Hays Seed Flax (N.Dak.No.1221)	12.03	+0.75
17-3	Russian,N.Dak.No.155	10.06	+0.98
7-11	Turkish	10.55	No bulk grown
9-2	Dakota Golden	11.78	" " "
64-1	Petrovski	13.25	" " "
65-1	Argentine (N.Dak.No.1115)	9.82	" " "
27	Nova Rossisk	11.04	____
72	N.Dak Centgener No. 720	13.00	____
74	N.Dak.Centgener No. 722	9.88	____

Disease-Resistant Plats.

The three North Dakota Resistant varieties which are being grown continuously on the same tenth-acre plats produced the yields which follow. This is the third successive crop of flax on these plats and the second year that these resistant varieties have been grown on them. Wilt destroyed at least half the stand of C. I. No. 8. No wilt was apparent on C. I. No. 14 but its stand was thinner than that of C. I. No. 13. The order of yield in these varieties was exactly the reverse of that of last year.

C. I. No.	Variety.	Yield per acre, bushels.
8	North Dakota Resistant No. 52	5.6
13	North Dakota Resistant No. 114	12.0
14	North Dakota Resistant No. 73	11.4

Date- and Rate-of-Seeding Tests.

Yields from the date-of-seeding test and the rate-of-seeding tests sown on April 1 and May 1, which were all on triplicated 1/55-acre plats, are given in the following table. The land used for these tests was relatively uniform. Averages for the three replicated plats in each test are shown.

Date-of-seeding test with Select Russian, N. Dak. No. 1215 (C. I. No. 3).

Date.	Average yield per acre, bus.
April 15	15.5
May 1	17.9
May 15	19.4
June 1	17.4
June 15	10.3

Rate-of-seeding test with Russian, N. Dak. No. 155 (C. I. No. 19).

Rate.	Average yield per acre, bushels. (May 1 seeding)	(June 1 seeding)
10 lbs.	14.92	14.67
15 "	15.17	16.50
20 "	16.25	17.25
25 "	16.17	17.00
30 "	17.00	17.17

In this test there was little difference in the yields between the two dates of seeding, and seeding more than 20 pounds to the acre seemed to give no significant increase in yield.

Williston Substation. Oct. 28. The weather has continued favorable for general farm work. Considerable fall plowing has been done. Thrashing is nearly finished. Potatoes have been dug with only a slight loss from freezing in the ground. The precipitation for the month of October has been slight.

UTAH:

Nephi Substation. Oct. 29. Seeding of grains on field plats was begun on Oct. 18 and completed on Oct. 24. Seeding in the nursery was finished on Oct. 28. The weather is favorable for field work but not warm enough to insure rapid germination of the fall-sown grains.

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OFFICE NOTES.

The following field men have arrived in Washington to spend the winter months in preparing their field reports and doing laboratory work with grains: Mr. Ross R. Childs, of Athens, Ga., Nov. 11; Mr. F. R. Babcock, of Williston, N. Dak., Nov. 17; and Mr. J. H. Martin, of Newell, S. Dak., Nov. 20.

Mr. Carleton returned on Nov. 23 from a trip through the northeastern and north central States.

Farmers' Bulletin 768, Dwarf Broomcorn, by Benton E. Rothgeb, was issued Nov. 18, 1916.

Galley proofs of Farmers' Bulletin 785, Seed-Flax Production, by Chas. H. Clark, and Farmers' Bulletin 786, Fall-Sown Grains in Maryland and Virginia, by T. R. Stanton, were read during the week of Nov. 20.

During the week of Nov. 13 the following experiment station officials visited the Office: Director W. M. Jardine and Prof. M. C. Sewell, of the Kansas Agricultural Experiment Station; President William Peterson, of the Utah Agricultural College, and Director F. S. Harris of the Utah station; Prof. Robert Stewart, of the Illinois station; Prof. T. L. Lyon of the New York (Cornell University) station; Prof. J. W. Gilmore, of the California station; Prof. Geo. Roberts, of the Kentucky station; Director Linfield and Professors Atkinson and Wilson of the Montana

station; Director Knight of the Wyoming station; Director Cordley of the Oregon station; Director Jones of the Idaho station; and Dr. E. M. Freeman, assistant dean of the College of Agriculture of Minnesota.

Attention is called to the following memorandum from the Chief Clerk of the Bureau in the matter of appointments.

Washington, D. C., November 3, 1916.

MEMORANDUM FOR HEADS OF OFFICES

Gentlemen:

In order to expedite the consideration of recommendations for appointment, the Secretary has requested us to make all our recommendations as complete as possible. With this end in view, your attention is called to the necessity for furnishing the following information when asked that appointments be made:

1. Name of appointee
2. Legal residence
3. Designation
4. Salary
5. Roll
6. Date effective
7. Duration of appointment
8. Whether to report in person or in writing
9. Detailed statement of duties to be performed
10. Qualifications of appointee for such duties
11. Any previous connection with the Department
12. Any other line of work engaged in and compensation therefor.
13. When a cooperative employee, whether his entire time is to be devoted to the work of the Department and the amount to be paid by cooperating agency

14. When appointing from a civil service certificate, the standing of the appointee on the certificate, with a statement indicating the disposition of any names which appear above that of the appointee.

Very truly yours,

(Signed) James E. Jones

Chief Clerk.

The following memorandum from the Secretary of Agriculture should be carefully noted:

November 9, 1916.

MEMORANDUM NO. 180.

Regarding the Regular Army Reserve.

The Act of Congress for making further and more effectual provision for the national defense, approved June 3, 1916, contains the following:

> "Sec. 33. USE OF OTHER DEPARTMENTS OF THE GOVERNMENT:- The President may, subject to such rules and regulations as in his judgment may be necessary, utilize the services of members and employees of all departments of the Government of the United States, without expense to the individual reservist, for keeping in touch with, paying, and mobilizing the Regular Army Reserve, the Enlisted Reserve Corps, and other reserve organizations."

The Regulations for the Regular Army Reserve prescribe in paragraph 65 the method by which the services of members and employees of other Departments of the Government may be utilized for the mobilization of the Regular Army Reserve. That

paragraph reads as follows:

> "65. Under authority conferred by section 33 of the act of June 3, 1916, the services of members and employees of all departments of the Government of the United States may be utilized for the mobilization of the Regular Army Reserve. In addition to the mail notice sent to each reservist under paragraph 60, the officer in charge of reservists' records may request United States marshals, postmasters, census enumerators, internal-revenue agents, and representatives of the General Land Office, Geological Survey, Forest Service, Weather Bureau, and other Bureaus, to notify all reservists who can be reached by them that mobilization has been directed by the President."

All Regular Army reservists are furnished with a copy of these regulations and know what to do in case of mobilization, even in the absence of formal instructions from Army Headquarters.

The Acting Secretary of War, by letter of Oct.21, 1916, requests that employees of this Department, stationed throughout the United States, be instructed to cooperate with representatives of the War Department in mobilizing the Regular Army Reserve if at any time in the future their cooperation is requested, or if the fact that mobilization of the Regular Army Reserve has been directed, reaches their notice.

The employees of the Department of Agriculture are therefore instructed, whenever mobilization of the Regular Army Reserve is directed by the President, to notify all reservists of whom they may have knowledge of the fact that mobilization has been ordered, whether the information reaches them through official channels or through newspaper notices.

Members of the Regular Army Reserve are soldiers of the Regular Army. They include men who, having served a portion of their enlistment periods with the

colors, have been furloughed to the Reserve for the remainder of their respective enlistment periods. They include also men who have previously served in the Regular Army, received honorable discharges therefrom, and have enlisted voluntarily in the Regular Army Reserve. They include soldiers of all grades authorized by law. They are subject to military law and governed by the Articles of War. They are subject to call of the President to join the colors whenever, in his judgment, actual or threatened hostilities justify such call.

D. F. Houston

Secretary.

FIELD NOTES.

SOUTH DAKOTA:

Highmore Substation. Nov. 11. Field work has been prevented for a few days by severe weather. Nearly all work is finished with the exception of corn husking, which is well advanced.

NORTH DAKOTA:

Dickinson Substation. Nov. 18. The work of cleaning the grain for sowing next spring is in progress. During the past week the weather has been comparatively mild, the temperature being higher than that of the preceding week. The ground was frozen sufficiently on Nov. 10 to interfere with plowing and it has not thawed out entirely since that time.

Maximum temperature for the month of November to date, 66 degrees (Nov. 5); minimum, -8 degrees (Nov. 13); precipitation, about 0.10 inch in the form of snow. The total precipitation during the last two months has been below normal and the ground is comparatively dry.

MONTANA:

Judith Basin Substation (Moccasin). Nov. 14. During a recent trip in the Gallatin Valley it was observed that the season is much later than in the Judith Basin. In the Gallatin Valley farmers have yet about half their thrashing to do, while at the station at Bozeman the work of thrashing the nursery grain has just started. In the Judith Basin thrashing is practically finished and the fall work on the Substation is completed.

The winter season has set in unusually early. At present there are several inches of snow on the ground and the minimum temperature the past two nights was 20 degrees below zero. The acreage sown to winter wheat will be somewhat smaller than was planned because of the early winter.

UTAH:

Nephi Substation. Nov. 16. Seeding of winter grain was finished on Oct. 30. Practically all has germinated but because of the very cold weather none has emerged. The soil is in good condition.

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OFFICE NOTES.

Galley proof of Department Bulletin No. 498, Experiments with Spring Cereals at the Eastern Oregon Dry-Farming Substation, Moro, Oregon, by D. E. Stephens, was read during the week of Nov. 27.

Department Bulletin No. 450 (Professional Paper) entitled "Improvement of Ghirka Spring Wheat in Yield and Quality," by J. Allen Clark, was issued on Dec. 4.

The following memorandum from the Chief of the Bureau of Plant Industry, regarding the necessity for economy in the use of the telegraph, should be carefully noted by all employees of the Department.

> "Attention is called to the importance of brevity in official telegrams. This applies to address and signature, as well as to body of message. Examination in the Secretary's Office of messages recently sent out from the Department has disclosed instances in which careful framing of messages would have reduced the toll from 10 to 40 per cent without affecting accuracy of address or impairing clearness of expression.
>
> Fiscal Regulations 43 and 44, which relate to the subject, should be strictly adhered to and special care taken to avoid use of unnecessary words in telegrams."

Field men who ship grain should see that the sacks used are free from holes and ripped seams. They should also see that sacks are tied securely and not tied so near the top that the string may slip off in shipping. In a recent mail shipment one sack arrived untied, the string evidently having slipped off because it was tied too near the top. Seed was also being lost from a hole in the seam of the bag.

FIELD NOTES.

TEXAS:

Amarillo Cereal Field Station. Dec. 2. During the month of November there was much cold and inclement weather. Maximum temperature, 84 degrees (Nov. 6); minimum, -1 degree (Nov. 16); precipitation, including snow, 0.10 inch; wind velocity, about normal.

All fall-sown grains, with the exception of the latest seedings, have emerged with good stands.

The work of thrashing is finished and nearly all the seed has been recleaned. The plats devoted to the work of the Office of Forage-Crop Investigations are now being plowed.

NORTH DAKOTA:

Dickinson Substation. Dec. 2. The weather of the latter half of November was mild with very little stormy or cloudy weather. There were 20 clear days during the month. Maximum temperature, 66 degrees (Nov. 4 and 5); minimum, -8 degrees (Nov. 13); precipitation, 0.38 inch, mostly in the form of snow. About 4 inches of snow fell during the month. At present the ground is bare; it has been frozen since Nov. 10.

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OFFICE NOTES.

Messrs. F. J. Schneiderhan and J. C. Brinsmade, Jr. arrived in Washington during the week of December 11 to spend the winter months in preparing their field reports and doing laboratory work with wheat and flax.

Mr. Manley Champlin, of Brookings, S. Dak., was in the Office for about ten days in consultation with the Cerealist and the various crop specialists regarding cooperative cereal investigations in South Dakota.

Messrs. F. J. Piemeisel and E. C. Stakman, of University Farm, St. Paul, Minn., arrived in Washington on Dec. 16 for the purpose of conferring with the pathologist in charge of cereal disease investigations.

Mr. W. H. Tisdale has recently been appointed Scientific Assistant in Plant Pathology and will be assigned to corn disease investigations. His headquarters will be Washington, D. C.

Page proofs of Farmers' Bulletin 785, Seed-Flax Production, by Chas. H. Clark, and 786, Fall-Sown Grains in Maryland and Virginia, by T. R. Stanton, were read during the week of Dec. 18.

Farmers' Bulletin 769, Growing Grain on Southern Idaho Dry Farms, by L. C. Aicher, was received from the Government Printing Office on Dec. 15.

Special attention is called to the following memorandum from the Chief of the Bureau of Plant Industry regarding use of automobile on official business:

"Under date of December 5, 1916, the Secretary has written me as follows:

> "Attention has been called to the case of an employee in charge of a field station who requested authority from his Bureau to use an automobile on official business and to secure reimbursement therefor on a mileage basis, which authority was refused. Subsequently an account was received from another employee at the station which included an item for the hiring of an automobile from the wife of the employee in charge. It thus appears that the employee in charge of the station attempted to do indirectly what he was not authorized to do directly.
>
> It is appreciated that in isolated locations where other means of transportation are not available it may, in rare instances, be distinctly advantageous to the service and necessary to permit an employee to hire a privately owned vehicle for official use from another employee of the Department or a member of the latter's immediate family domiciled with or dependent upon him; but as a general rule such practice should be discouraged in all bureaus and offices of the Department, and reimbursement accounts involving such items should invariably be accompanied by detail statements clearly establishing the necessity from the Department's viewpoint."

I shall be obliged if you will bring this to the attention of your employees with a view to carrying out the instructions of the Secretary.

Very truly yours,
Wm. A. Taylor,
Chief of Bureau."

YIELDS OF SPRING WHEAT IN UNIFORM EXPERIMENT

The uniform experiment with spring wheat varieties in the Great Plains area, started in 1915, was continued during the past season. The yields are given in the table which follows. The Office of Cereal Investigations is not cooperating at North Platte, Nebr., and Crookston, Minn., but seed of the uniform varieties was furnished on request and the yields obtained have been reported by the men in charge.

At Akron, Colo., the Kubanka (C. I. No. 4063) and Power (C. I. No. 3697) were seeded later than the other varieties, which accounts for their low yields. At Highmore, S. Dak., Glyndon (C. I. No. 2875) failed to germinate and was reseeded, but was destroyed by rust. The yield of Arnautka (C. I. No. 4064) at Crookston, Minn., was not reported.

The table shows the severe effect of the rust epidemic. The most serious injury from rust was at the stations in North Dakota, South Dakota, and Minnesota. At Williston, N. Dak., the damage was not so severe, while at Moccasin, Mont., there was no rust. The low yields on the stations farther south were due more to drought than to rust.

Annual and average yields in bushels per acre of 11 varieties of hard spring wheat grown in a uniform series on 11 experiment stations in the Great Plains area in 1916.

Station	Kubanka C.I.No. 1440	Kubanka C.I.No. 4063	Arnautka C.I.No. 4064	Marquis C.I.No. 3641	Pioneer C.I.No. 4324	Ghirka C.I.No. 1517
Amarillo, Tex.	3.9	3.4	4.5	3.9	6.0	4.2
Akron, Colo.	12.9	4.7	11.4	11.8	6.9	7.5
North Platte, Nebr.	21.0	19.0	17.5	19.2	19.7	16.3
Archer, Wyo.	5.8	6.4	6.9	5.4	7.7	5.5
Newell, S. Dak.	13.8	11.0	10.3	8.1	6.2	8.9
Highmore, S. Dak.	12.2	10.5	7.5	6.3	6.7	7.2
Brookings, S. Dak.	11.6	9.1	11.1	7.2	8.8	9.9
Crookston, Minn.	11.0	12.7	0.0	5.4	9.8	5.7
Dickinson, N. Dak.	16.6	17.4	14.6	13.5	15.0	7.6
Williston, N. Dak.	36.0	37.2	37.2	35.0	36.7	37.7
Moccasin, Mont.	28.7	28.0	25.6	32.9	25.2	29.0
Average	15.8	14.5	14.7	13.5	13.5	12.7

Station	Prelude C.I.No. 4323	Preston C.I.No. 3081	Power C.I.No. 3697	Glyndon C.I.No. 2873	Haynes C.I.No. 2874	
Amarillo, Tex.	1.6	3.4	1.6	1.6	0.5	
Akron, Colo.	8.3	7.2	1.6	7.2	0.8	
North Platte, Nebr.	20.2	15.8	10.8	11.7	10.3	
Archer, Wyo.	5.0	2.1	5.7	5.7	5.0	
Newell, S. Dak.	8.1	5.8	6.5	4.1	5.6	
Highmore, S. Dak.	9.5	7.0	5.0	0.0	1.7	
Brookings, S. Dak.	11.1	7.5	2.9	2.6	0.6	
Crookston, Minn.	7.5	4.9	2.2	3.1	2.2	
Dickinson, N. Dak.	12.4	8.3	6.7	5.5	3.1	
Williston, N. Dak.	29.5	35.0	31.8	29.0	28.4	
Moccasin, Mont.	20.6	27.1	24.5	26.1	24.0	
Average	12.2	11.3	9.0	8.8	7.5	

The durum wheats proved more rust resistant than the common wheats. The Kubanka appeared to be more resistant than the Arnautka. A pure line Kubanka (C. I. No. 4063) originated at Dickinson, N. Dak., included in the uniform series for the first time, yielded more than the standard Kubanka only at the North Dakota, Minnesota, and Colorado stations. This pure strain seems to be best adapted to the section where it was developed.

There seemed to be little difference in the rust resistance of the varieties of spring common wheat, except that the Haynes Bluestem was very susceptible. The earliness of the Marquis, Pioneer, Ghirka, and Prelude enabled them partially to escape the rust, hence their larger yields.

FIELD NOTES.

NORTH DAKOTA:

Dickinson Substation. Dec. 18. Very little grain is being hauled to market in spite of the fact that the roads are still in good condition. During the first half of the month the weather was changeable and during the past week it has been very cold. Maximum temperature, 58 degrees (Dec. 3); minimum, -28 degrees (Dec.13); precipitation, 3.4 inches in the form of snow. On Dec.14 the temperature rose from -24 degrees to 23 degrees, a rise of 47 degrees in about 12 hours. Snow is about 2.3 inches deep at the present time.

Agricultural Experiment Station (Fargo). Dec. 14. The minimum temperature for the month of December to date was -20 degrees (Dec. 13). On most of the farms in the vicinity of the Station fall work has been

finished, although in poorly drained places the excessive rains of the early autumn interfered with plowing.

IDAHO:

Aberdeen Substation. Dec. 3. During November four carloads of alfalfa, clover, and field pea seed were cleaned for farmers. The cleaning machinery was run nearly every day during the month and a few night runs were made in order to complete a part of the work by a certain date.