LATENESS OF THE SPRING OF 1928 AS DETERMINED BY COMPARISON OF FIRST BLOOMING DATES

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As THE result of a comparison of records kept on the first flowering dates of plants during the springs of 1927 and 1928, it is found that the season of 1928 was several days later than that of the previous year.

Had the records been only from the locality of Norman, Oklahoma, it might have been uncertain as to which of the years was abnormal, but reports from other stations in the Middle West lead to the conclusion that it was the spring of 1928 which was unusually late.

In answer to a statement concerning the lateness of the wild flowers in the vicinity of Norman, the following answers were received from correspondents in other Middle Western schools:

U. R. Gore, Texas Agricultural and Mechanical College, College Station, Texas, 3/1/28: "Late season."

Mrs. Hortense Winton, Texas Christian University, Fort Worth, Texas, 3/5/28: "This is one of the latest springs I have ever seen here in Fort Worth. Sweet violets which usually begin blooming here by the middle of January are blooming now for the first time this season. Much rain and cold weather since the beginning of the year have delayed plants."

Same, 3/23/28: "The season is a good month behind the usual expectations."

Professor Delzie Demaree, University of Arkansas, Fayetteville, Arkansas, 3/14/28: "The three weeks of cold weather certainly checked things."

Same, 4/27/28: "They are coming on fairly well but the cold rains hinder them very much."

Miss Mildred E. Mathias, Missouri Botanical Garden, St. Louis, Missouri, 3/6/28: "Plants are unusually late this spring. We have had several extremely cold periods which have greatly delayed flowering."

Miss Mary L. Knoop, University of Missouri, Columbia, Missouri, 3/8/28: "Wild flowers are also late here."

Miss Helen Bishop, University of Colorado, Boulder, Colorado, 5/2/28: "The spring is later this year in that there is not the abundance of flowers that there was last year, but that the dates of first blooming are about the same. We have been having a great deal of snow and rain."

Miss Anabel Clark, Iowa Wesleyan College, Mount Pleasant, Iowa, 3/3/28: "The flowers are late this year which seems strange as the weather has been warm."

Same, 4/14/28: "We have had a snowstorm and freeze every week for the past three weeks. This has put back most of the flowers and has killed some."

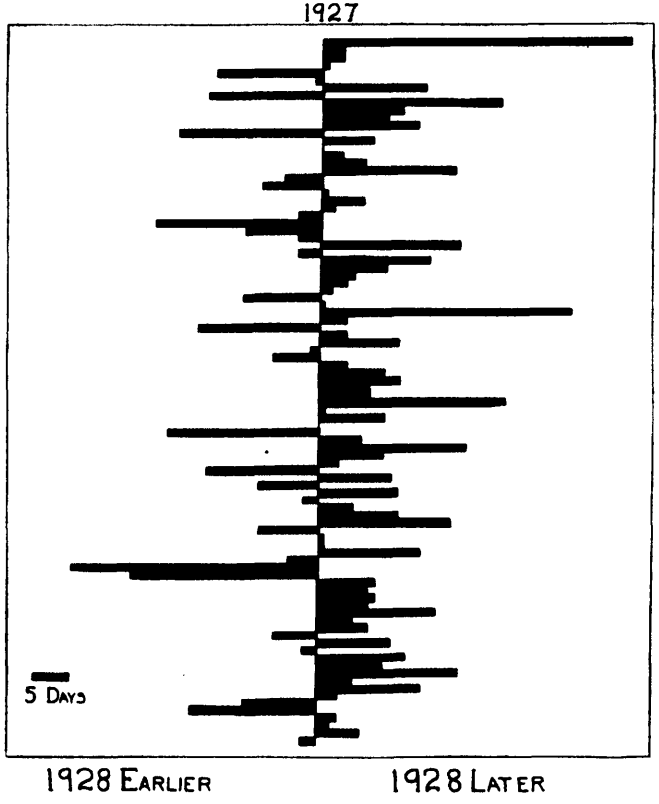
Miss Myrel Burk, Iowa State Teachers College, Cedar Falls, Iowa, 4/28/28: "More than a week of cold weather has retarded the flowering of spring plants very much."

Professor Elda R. Walker, University of Nebraska, Lincoln, Nebraska, 3/15/28: "It seems to me that this has been the slowest spring we have had in many years."

Dr. Mary E. Renich, Augustana College, Souix Falls, South Dakota, 5/2/28: "April was cold this year."

Taking the season of 1927 as normal, the relation of the first blooming dates of spring plants of the two years is shown in the accompanying graph. The plants of 1927 are represented on the straight vertical line, plotted in order of first appearance. The dates of the same species in 1928 are plotted on the same horizontal line. When earlier in 1928 than in 1927 they are placed to the left of the vertical 1927 normal, and when later in 1928 they are placed to the right.

It is easily seen that the majority of the 1928 dates are on the right



side of the line. Numerically speaking, 64 plants (68%) were later in 1928 than in 1927, 28 plants (29.7%) were earlier, and 2 plants (2.1%) appeared on the same day both years. Averaging the amount of difference, it is found that the spring of 1928 was 3.2 days later than that of 1927.

The following list represents the material on which the graph is based. It consists of the plants arranged in order of appearance in the spring of 1927, with dates of first blooming for both years, and the number of days the plants appeared earlier or later in 1928 than in 1927.

COMPARISON OF FIRST BLOOMING DATES OF PLANTS IN THE SPRINGS OF 1927 AND 1928

	1927	1928	earlier than 1927	later than 1927
Capsella Bursa-pastoris (L.) Medic.	1/19	2/29		41
Acer saccharinum L.	2/3	2/6		3
Claytonia virginica L.	2/3	2/6		3
Stellaria media (L.) Cyrill.	2/5	2/6		1
Taraxacum officinale Weber.	2/5	1/22	14	
Ulmus americana L.	2/8	2/7	1	
Houstonia minima Beck.	2/8	2/22		14
Arabis virginica (L.) Trel.	2/21	2/6	15	
Anemone caroliniana Walt.	2/24	3/19		24
Erythroneum mesochoreum Knerr.	2/24	3/6		11
Draba caroliniana Walt.	2/24	3/4		9
Draba brachycarpa Nutt.	2/25	3/9		13
Viola Rafinesquii Greene.	2/25	2/6	19	
Androsace occidentalis Pursh.	3/8	3/15		7
Lamium amplexicaule L.	3/10	3/10	0	0
Prunus angustifolia Var. *Watsoni* (Sarg) Waugh	3/10	3/13		3
Antennaria plantaginifolia (L.) Richards	3/10	3/26		6
Oxalis stricta L.	3/15	4/2		18
Viola papilionacea Pursh.	3/24	3/19	5	
Cogswellia daucifolia (Nutt.) M. E. Jones	3/27	3/19	8	
Sisymbrium canescens Nutt.	3/29	3/30		1
Serinia oppositifolia (Raf.) Ktze.	3/30	4/5		6
Agoseris cuspidata (Pursh) Steud.	3/31	4/2		2
Veronica peregrina L.	4/2	3/30	3	
Sagina decumbens (Ell.) T. & G.	4/2	3/11	22	
Populus deltoides Marsh.	4/2	3/23	10	
Sisyrincheum gramineum Curtis.	4/4	4/1	3	
Rubus procumbens Muhl.	4/5	4/24		19
Quercus marilandica Muench.	4/5	4/2	3	
Achillea lanulosa Nutt.	4/8	4/23		15
Allium mutabile Michx.	4/8	4/17		9
Lunaria canadensis (L.) Dumont.	4/8	4/13		5
Oenothera laciniata Hill.	4/8	4/12		4
Oxalis violacea L.	4/8	4/10		2
Androstephium coeruleum (Scheele) Greene	4/9	3/30	10	
Plantago virginica L.	4/9	4/10		1
Medicago lupulina L.	4/12	5/16		34
Baptisia bracteata (Muhl.) Ell.	4/14	4/18		4
Callirhoë involucrata (T. & G.) Gray.	4/14	3/29	16	
Chaerophyllum procumbens (L.) Crantz.	4/14	4/18		4
Corydalis aurea Willd.	4/14	4/25		11
Sitilias caroliniana (Walt.) Raf.	4/14	4/13	1	
Rumex altissimus Wood.	4/14	4/8	6	
Salix nigra Marsh.	4/14	4/18		4
Valerianella radiata (L.) Dufr.	4/14	4/23		9
Crataegus sp.	4/14	4/25		11
Viburnum rufidulum Raf.	4/14	4/21		7
Bellis integrifolia Michx.	4/16	4/23		7
Carya illinoensis (Wang.) K. Koch.	4/16	5/11		25
Quercus stellata Wang.	4/16	4/17		1
Cryptantha Fendleri (A. Gray) Greene	4/16	4/25		9
Robinia Pseudoacacia L.	4/18	4/18	0	0
Morus rubra L.	4/19	3/30	20	
Oxytropis Lamberti Pursh.	4/19	4/25		6
Scutellaria parvula Michx.	4/19	5/9		20
Erigeron divergens T. & G.	4/28	5/7		9
Gaura sinuata Nutt.	5/3	5/6		3

Geranium carolinianum L.	5/3	4/18	15	
Melilotus officinalis (L.) Lam.	5/3	5/13		10
Pastinaca sativa L.	5/3	4/25	8	
Pentstemon Cobaea Nutt.	5/3	5/14		11
Rhus Toxicodendron L.	5/3	5/1	2	
Amorpha fruticosa L.	5/3	5/8		5
Coreopsis verticillata L.	5/3	5/14		11
Spermolepsis echinata (Nutt.) Heller.	5/3	5/21		18
Juglans nigra L.	5/5	4/25	8	
Oenothera speciosa Nutt.	5/5	5/6		1
Oxybaphus nyctagineus (Michx.) Sweet.	5/5	5/6		1
Schrankia uncinata Willd.	5/5	5/19		14
Solanum carolinense L.	5/5	5/1	4	
Mimulus Geyeri Torr.	5/5	4/2	33	
Radicula Nasturtium-aquaticum (L.) Britten & Rendle	5/5	4/10	25	
Smilax Bona-Nox L.	5/5	5/13		8
Vitis vulpina L.	5/5	5/12		7
Asclepias amplexicaulis Sm.	5/5	5/13		8
Evolvulus argenteus Pursh.	5/7	5/14		7
Polygala Senega L.	5/7	5/23		16
Yucca glauca Nutt.	5/7	5/12		5
Pentstemon gracilis Nutt.	5/7	5/14		7
Specularia perfoliata (L.) A. DC.	5/8	5/2	6	
Melilotus alba Desr.	5/9	5/19		10
Silene antirrhina L.	5/9	5/7	2	
Cornus asperifolia Michx.	5/9	5/21		12
Jatropha stimulosa Michx.	5/12	5/21		9
Monarda dispersa Small.	5/12	5/31		19
Psoralea cuspidata Pursh.	5/14	5/19		5
Krameria lanceolata Torr.	5/14	5/28		14
Hymenopappus carolinensis (Lam.) Porter.	5/16	5/19		3
Oenothera missouriensis Sims.	5/16	5/6	10	
Phlox pilosa L.	5/20	5/5	15	
Argemone intermedia Sweet.	5/20	5/23		3
Lepachys columnaris (Sims.) T. & G.	5/23	5/25		2
Rudbeckia hirta L.	5/26	6/1		6
Tephrosia virginiana (L.) Pers.	5/26	5/24	2	