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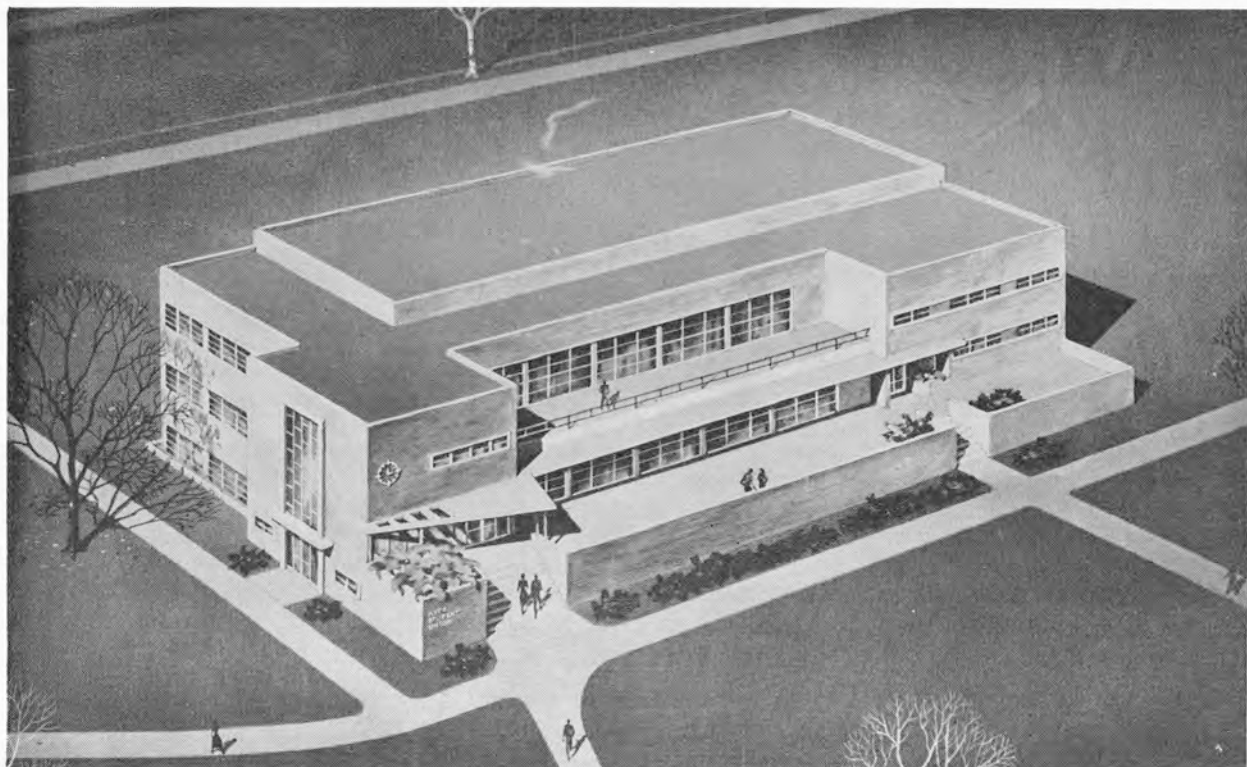
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# THE EDUCATIONAL LEADER

Published by the Faculty of the  
KANSAS STATE TEACHERS COLLEGE  
Pittsburg, Kansas



Architect's drawing of the new Memorial Student Union Building, Kansas State Teachers College, Pittsburg, now under construction on the north side of the campus, on Cleveland Street, between the Library and the Gymnasium.

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## The Kansas State Teachers College Herbarium

THEODORE MELROSE SPERRY

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A herbarium may be defined as a collection of mounted and classified dried plants. It is especially useful for determining the names and conditions of growth of the many kinds of plants—beneficial, detrimental, and neutral—which may be found in one or more localities or regions.

When, in 1946, I was assigned duties as botanist on the staff of the Biology Department, I inherited the care and supervision of the college herbarium. At that time I found a collection of about 1,300 sheets of specimens, variously mounted and named, with perhaps 300 or 400 of them classified. As might be expected with a still small herbarium collection, there were quite a number of common local weeds and other plants missing, as well as many others which are less conspicuous and well known.

The two principal periods of growth of the herbarium had been in 1928 and 1929, under the influence of Dr. Claude Leist, and from 1938 to 1942 under the leadership

of Dr. J. A. Trent. There was relatively little herbarium activity in the intervening years.

It was evident, however, that there was a need of an organized herbarium at the college, as there was no herbarium in this part of the state, or adjoining areas. The four known Kansas herbaria are located at the University of Kansas, Lawrence; Kansas State College, Manhattan; Fort Hays Kansas State College, Hays; and Kansas State Teachers College, Emporia. Of these, the first two are much the largest, and no doubt both have more representative flora from southeastern Kansas than the local herbarium. The other two herbaria are reported to have very good local collections, especially the one at Hays.

In certain respects, the vegetation of southeastern Kansas differs sharply from that of the rest of the state, primarily as a result of a considerably higher rainfall and somewhat warmer minimum temperatures during the winter. There is,

as a result, a number of plants of southeastern United States which are found in Kansas only in Cherokee and Crawford counties, and many others found mainly or entirely only in the south half of the eastern third of the state. The development of a good local herbarium would be particularly valuable for work with this group of plants.

#### CURRENT PROCEDURES

Since becoming a member of the staff, I have attempted to place the herbarium on a substantial working basis. This has involved a variety of steps. First was the production of genus folders (from ordinary brown wrapping paper) and the sorting of all plants on hand to these folders. Next the folders were arranged as to divisions and families of plants. Then a system was set up in connection with the classes in Plant Taxonomy for adding new specimens to the herbarium and for correcting the names of the mislabeled plants in the collection. Standard herbarium mounting paper was obtained, and all new specimens added are on this type of paper. None of the previous 1,300 specimens were on standard herbarium paper except the 248 sheets of the Bennington Ross collection. Most of the rest were on letter-sized paper or smaller, although some were on oversized sheets. Subsequently, standard weight genus folders have been obtained and the temporary paper folders are now being slowly replaced by the standard folders.

With the aid of a herbarium assistant, some of the many unmounted plants are now being mounted and added to the collection, including all current acquisitions not collected by members of the taxonomy classes. (The taxonomy students mount their own specimens.) The assistant also has just completed a catalogue of all collections in the herbarium, so arranged that it can be kept up-to-date and used for any of various taxonomic studies as needed. (It is the completion of this catalogue which makes this paper possible.)

One of the big problems facing any herbarium curator is the one of authoritatively naming the specimens on hand. His difficulty is based in part on the lack of a single common source of reference for all plant names. The task of compiling the names and descriptions of all plants just for the United States alone is an enormous one, and such a list has never yet been published. In addition, there are considerable differences of opinion among the various authorities themselves as to just what constitutes a genus or species, or as to which of two or more possible names should be assigned to a given kind of plant. This merely adds to the confusion.

#### REGIONAL MANUALS

The best taxonomic manuals available for the United States are regional manuals. The flora of the northeastern United States reaches its southwestern limits in southeastern Kansas, and is covered by both *Gray's Manual of Botany* and Brit-

ton and Brown's *Illustrated Flora of the United States and Canada*. The flora of the central prairies and plains extends east to the forested areas of the Ozarks and the Mississippi River valley and is covered by Rydberg's *Flora of the Prairies and Plains of Central North America*. The flora of the southeastern United States extends northwest as far as the Arkansas and the Oklahoma Ozarks. Small's *Manual of the Southeastern Flora* covers this area as far to the northwest as western Tennessee, and in general is the best manual for the flora of Arkansas and eastern Oklahoma although these areas are not specifically covered by any comprehensive taxonomic manual. Thus it is evident that southeastern Kansas lies near the limits of these three distinctly different regional floras.

Since Rydberg's *Flora* covers all of Kansas and is newer (by some 20 years) than the Seventh edition of *Gray's Manual* or Britton and Brown's *Flora* (both of which were written primarily for the forested northeastern section of the country), it was decided (in 1946) to adopt Rydberg's *Flora* as the principal authority for the herbarium, and the collections were labeled accordingly. Plants not included in Rydberg's *Flora* were named according to the Seventh edition of *Gray's Manual* or Small's *Manual*, depending on the locality of the collection.

On the last of June, 1950, the Eighth edition of *Gray's Manual of Botany* appeared. This remarkable work, 19 years more recent than the

last comprehensive *Flora* for this area, and 42 years more recent than the Seventh Edition of the same work, specifically covers the area south to the southern borders of Missouri and Kansas and west to the 96th meridian. This, then, includes the flora of eastern Kansas, north and east of Caney in Montgomery County, and it is probable that few native or naturalized plants can be found in this area which are not included in this manual. Hence, this new edition of *Gray's* is now being adopted as the principal authority for this herbarium. Rydberg's and Small's works will still be used for their respective areas for such plants as are not included in *Gray's Manual*, while for those relatively few plants brought in from more distant regions the best available manuals for those areas will be used.

This change of principal authority from Rydberg's *Flora* to *Gray's Manual* has made necessary an extensive revision of the scientific names on many of the herbarium sheets and in the catalogue. However, no further major revision of names of herbarium specimens is probable for many years.

#### SCOPE OF HERBARIUM

Since the recognition of different species of closely related plants is made much easier by actually comparing the various kinds placed side by side, no attempt is being made to limit the collection in this herbarium only to the local flora. Instead, a representative collection of specimens from various areas is be-

ing included for the comparison of (a) related species in the same genus, and (b) the same species as it grows in different climates and in different habitats. There are no present plans for attempting even an approximately complete collection from the entire state. Even the goal of a complete collection of Crawford and Cherokee county vascular plants seems relatively remote at present.

Although ferns and the fern-allies are being included in the herbarium, no effort is being made to include the algae, fungi, or liverworts and mosses. However, it is hoped that eventually some of these groups will be included on a representative basis, and already a few scattered specimens from these groups occur in the collection.

The herbarium in September, 1950, included 2,283 sheets of specimens, the oldest dating back to 28 sheets collected by an unidentified person in Colorado in 1916. Whatever plants were collected earlier than that, and there may have been many, were destroyed by the Russ Hall fire of 1914. The distribution of sheets collected since that time, according to time of collection, is listed here.

Year	No. of Sheets
1916	28
1917	2
1926	2
1927	12
1928	130
1929	75
1930	1
1931	0
1932	0

1933	11
1934	29
1935	33
1936	28
1937	38
1938	259
1939	385
1940	116
1941	112
1942	93
1943	2
1944	6
1945	0
1946	1
1947	63
1948	191
1949	346
1950, to September	238
Year of collection unknown	82

#### CATALOGUING

Since duplicates of some specimens are collected and included in these totals, the cataloguing and numbering is done by individual collections rather than by sheets of specimens obtained from these collections. The number of separate collections here represented is 2,045. Of these, 1451 were made in Kansas, while 374 collections were made in other states. In addition, three collections were made in other countries. In 1928, an unknown collector obtained 31 specimens from the Missouri Botanical Gardens in St. Louis. Most of these were of foreign or horticultural plants. In 1941, G. A. Mullen obtained 18 specimens, including many foreign species, from the experimental farms of Kansas State College at Manhattan, Kansas. Finally, there are 168 collections in the herbarium from unnamed localities. Most of these were prob-

ably obtained from the vicinity of Pittsburg.

### DISTRIBUTION

The distribution of Kansas collections by counties is as follows:—

Allen	1
Anderson	1
Bourbon	7
Butler	5
Cherokee	122
Crawford	1,236
Douglas	4
Greenwood	3
Labette	1
Linn	14
Montgomery	1
Miami	1
Neosho	37
Sedgwick	1
Sumner	3
Wilson	8
County unknown	6
(Total of 16 counties)	

The distribution of specimens collected from other states is as follows:—

Alabama	5
Arizona	1
Arkansas	21
California	1
Colorado	36
Georgia	10
Illinois	46
Indiana	4
Kentucky	4
Louisiana	1
Michigan	25
Minnesota	1
Mississippi	4
Missouri	138
North Carolina	6
Ohio	2
Oklahoma	26
Tennessee	3
Virginia	4
West Virginia	3
Wisconsin	33
(Total of 22 states)	

Collections made outside the United States include one from Canada, one from England, and one from Scotland.

The collections in the KSTC herbarium represent the effort of 108 collectors. Of these, 79 persons made 1277 collections which had been deposited in the herbarium prior to 1946, while the remaining 29 have added 728 specimens since I became the herbarium curator.

### COLLECTORS

The following list of collectors not only includes the number of collections made by each, but also shows the years in which their collections were made.

Collectors	No. of collections	Year
Angelly, Doris	1	1939
Baldrige, W. L.	16	1947
Bass, Harriette E.	21	1949
Blase, Robert	35	1950
Bolton, Rexford	7	1939
Bond, Mrs. Ray	8	1940
Boone, Leo	3	1940
Bournonville, Lee	9	1933(?)
Breckenridge, Elma	2	1938
Briley, Betty	2	1941
Buess, John	18	1940
Buck, (?)	1	(?)
Burghart, Wilma	50	1939
Burner, Charles	11	1948
Burner, Pat Hoskins	63	1949
Caldwell, Prof. L. H.	1	1949
Carlile, (?)	15	1941
Chapman, Blair	10	1939
Clements, Sammy	2	1938
Colyer, Luther	9	1939
Cooper, Virginia	16	1939
Coughenour, V.	1	1929
Cox, Dillard	12	1941
Dellinger, Dr. O. P.	1	1940
Dennis, Prof. Parley	1	1940
Doores, James	11	1939
Dobbs, Bruce A.	9	1948
Drummiller, (?)	1	1941
Dryden, Fred	1	1950



Collectors	No. of collections	Year	Collectors	No. of collections	Year
Dumm, H. & Burnside, P.,	1	(?)	Rite, Harold	12	1939
Fairley, Gretta	1	1946	Robison, Dr. F. S.	1	1949
Featherstone, Fred	15	1949	Ross, Bennington	248	1938-39
Fish, Maxine	21	1949	Rutherford, Charles and		
Foiles, C. F.	6	1939	Rutherford, Lillian	1	1948
Fritts, (?)	10	1941	Sammons, L. L.	8	1939
Galligar, Dr. Gladys C.	3	1949	Sherman, Theodore	29	1948
Gardner, Lillian	10	1941	Shewmaker, Jimmie Jay	16	1950
Gier, Dr. Leland J.	1	1940	Siple, Belle	10	1939
Gier, Dr. Leland J. and			Snider, Mosse	31	1928
Mannoni, S. A.	19	1939	Snider, Mosse and		
Gobetz, Robert	14	1949	Nading, Ethel	1	1928
Grawe, Avis, Iva Leist,			Snider, Mosse and		
and Olive Falls	1	1928	Taylor, Vera	9	1928
Hackney, Betty	2	1940	Spendlove, W. G.	1	1940
Hall, Louise	18	1939	Sperry, Dr. Theodore M.,	253	(1934-40)
Hammerton, Harry	10	1940			(1947-50)
Holmes, E. Bruce	13	1948	Stanley, G. Leigh	26	1950
Householder, D. J.	34	1939	Stevens, Edward	16	1940
Howell, Nellie	5	1944	Stillwaugh, George	1	1947
Huffman, Marion	37	1950	Stone, Elliott	8	1939
Hunt, (?)	10	(?)	Sutterby, J.	1	(?)
Jameson, Marie	2	1939	Taylor, Vera	34	1926-28
Johnston, Ellsworth	12	1948	Taylor, Vera and		
Jones, T. W.	16	1941	Nading, Ethel	2	1928
Korte, Robert L.	9	1950	Trabue, (?) and		
Lance, John	29	1939	Robinson, (?)	1	(?)
Lance, Ray	17	1942	Trent, Dr. J. A.	49	1940
Leist, Dr. Claude	9	1927-30	Trogden, W.	41	1939
Leist, Mrs. Iva	1	1927	Van Cochrane, Bertie	1	1938
Leonard, Dr. Edgar M.	32	1948	Van Norsdall, W.	40	1942
Luciana, Sister M.	45	1939	Viets, Loren	2	1941
McCann, Pat	1	1950	Wantland, C.	32	(?)
McClure, Al.	7	1941	West, Kent	4	1939
McDonald, Joyce	1	1927	Wilson, Dan	28	1948
Mannoni, S. A.	1	1940	Yencie, Frances	1	(?)
Mertz, Edna	1	1939	Plant Taxonomy class	4	1948
Miller, Herbert	4	1939	Collectors unknown	193	1916-48
Miller, Jean	19	1942			
Modury, E.	1	1928			
Moore, Lois	9	1929			
Mullen, G. A.	22	1941			
Nading, Ethel	6	1928			
Nelson, Ernest	54	1950			
Norman, Phil	12	1941			
Paradee, Dan	13	1942			
Potter, Blendera	6	1937			
Register, Katy	2	1938			
Rinehart, (?)	2	(?)			

Any corrections or additional items of information for these lists are welcome. The collections by unidentified collectors, in addition to the plants collected in Colorado in 1916 and 1917, were mostly made in 1927, 1928, and 1929. Several of them, however, were collected in 1938 and 1939.

PLANTS IN THE KSTC (PITTSBURG) HERBARIUM, AS OF  
SEPTEMBER 7, 1950

In order that a permanent record of the plants of the herbarium may be made available to those interested, this initial list is being published with the expectation that from time to time supplementary lists of additions to the herbarium will be made. For brevity, (and since common names are very uncertain entities anyway), only the scientific names are listed. These are arranged in the same order as that adopted for the herbarium specimens,—i. e. alphabetically by species in the genera, by genera in families, and by families in the major plant groups.

Algae

Characeae

*Chara fragilis*

Mosses

Bryaceae

*Bryum* sp.

Dicranaceae

*Dicranella heteromalla* (L.) Schimp.

Ditrichaceae

*Ditrichum* sp.

Fissidentaceae

*Fissidens taxifolius* Hedw.

Funariaceae

*Funaria hygrometrica* Hedw.

*Physcomitrium turbinatum* (Mx.)

Brid.

Hypnaceae

*Amblystegium varium* (Hedw.)

Lindb.

*Brachythecium salebrosum* (Hoffm.)

Br. & Sch.

*Camptylidium chrysophyllum* (Brid.)

Bryhm.

*C. hispidulum* (Brid.) Mitt.

*Entodon seductrix* (Hedw.) C. Muell.

*Eurychium serrulatum* (Hedw.)

Kindh.

Hypnaceae—*Concluded*

*Leptodictyum riparium* (L. Hedw.)

Warnst.

Leskeaceae

*Leskea graciliscens* Hedw.

*Thuidium microphyllum* (Hedw.) Best

Mniaceae

*Mnium cuspidatum* Hedw.

Polytrichaceae

*Atrichum angustatum* (Brid.) BSG

*Catharinaea angustata* Brid.

Pottiaceae

*Barbula unguiculata* Hedw.

*Weisia viridula* Hedw.

Pteridophytes

Equisetaceae

*Equisetum arvense* L.

*E. hyemale* L. var. *robustum* (A. Br.)

A. A. Eat.

*E. sp.*

Lycopodiaceae

*Lycopodium inundatum* L.

Ophioglossaceae

*Botrychium virginianum* (L.) Sw.

Osmundaceae

*Osmunda regalis* L. var. *spectabilis*

(Willd.) Gray

Polypodiaceae

*Adiantum pedatum* L.

*Asplenium platyneuron* (L.) Oakes

*Athyrium thelypteroides* (Michx.)

Desv.

*Camptosorus rhizophyllus* (L.) Link.

*Cheilanthes Feei* Moore

*Dennstaedtia punctilobula* (Michx.)

Moore

*Dryopteris cristata* (L.) Gray

*D. hexagonoptera* (Michx.) Christens.

*D. novaboracensis* (L.) Gray

*D. Thelypteris* (L.) Gray

*Onoclea sensibilis* L.

*Polypodium polypodioides* (L.) Watt.

var. *Michauxianum* Weath.

*P. virginianum* L.

*Polystichum acrostichoides* (Michx.)

Schott.

*Pteridium aquilinum* (L.) Kuhn

var. *latiusculum* (Desv.) Underw.

*Woodsia obtusa* (Spreng.) Torr.

## Gymnosperms

## Pinaceae

- Cedrus Deodara Loud.
- Juniperus communis L.
- J. virginiana L.
- J. sp.
- Pinus Banksiana Lamb.
- P. nigra Arnold
- P. ponderosa Laws.
- P. rigida Mill.
- P. Strobus L.
- P. sylvestris L.
- P. virginiana Mill.
- Sequoia gigantea Dene.
- S. sempervirens Endl.
- Taxodium distichum (L.) Richard
- T. uniconatum
- Thuja sp.
- Tiawania cryptomenoides

## Taxaceae

- Taxus baccata L.

## Angiosperms

## Acanthaceae

- Justicia americana (L.) Vahl
- Ruellia humilis Nutt.
- R. strepens L.

## Aceraceae

- Acer Negundo L.
- A. platanoides L.
- A. rubrum L.
- A. saccharinum L.
- A. saccharum Marsh.

## Aizoaceae

- Mollugo verticillata L.

## Alismataceae

- Sagittaria latifolia Willd.

## Amaranthaceae

- Acnida tamariscina (Nutt.) Wood
- Amaranthus retroflexus L.

## Amaryllidaceae

- Agave virginica L.
- Hypoxis hirsuta (L.) Coville

## Anacardiaceae

- Rhus aromatica Ait.
- R. copallina L.
- R. glabra L.
- R. radicans L.

## Annonaceae

- Asimina triloba (L.) Dunal

## Apocynaceae

- Amsonia Tabernaemontana Walt.
- Apocynum cannabinum L.
- A. sibiricum Jacq.
- Vinca minor L.

## Araceae

- Arisaema Dracontium (L.) Schott
- A. triphyllum (L.) Schott

## Aristolochiaceae

- Asarum canadense L.

## Asclepiadaceae

- Ampelamus albidus (Nutt.) Britt.
- Asclepias amplexicaulis Sm.
- A. hirtella (Pennell) Woodson
- A. incarnata L.
- A. stenophylla Gray
- A. Sullivantii Engelm.
- A. syriaca L.
- A. tuberosa L.
- A. verticillata L.
- A. viridiflora Raf.
- A. sp.

- Asclepiodora virdis (Walt.) Gray

## Balsaminaceae

- Impatiens Balsamina L.
- I. capensis Meerb.

## Berberidaceae

- Berberis Thunbergii DC.
- Podophyllum peltatum L.

## Bignoniaceae

- Campsis radicans (L.) Seem.
- Catalpa bignonioides Walt.
- C. speciosa Warder

## Boraginaceae

- Hackelia virginiana (L.) I. M. Johnston
- Heliotropium tenellum (Nutt.) Torr.
- Lithospermum canescens (Mx.) Lehm.
- L. incisum Lehm.
- Mertensia virginica (L.) Pers.
- M. sp.
- Oreocarya sp.

## Buxaceae

- Buxus sempervirens L.

## Campanulaceae

- Campanula americana L.
- Lobelia Cardinalis L.
- L. spicata Lam. var. hirtella Gray



Campanulaceae—*Concluded*

- L. spicata* Lam. var. *leptostachys* (A. DC.) Mackenz. and Bush.
- L. siphilitica* L.
- Specularia biflora* (R. & P.) Fisch. & Mey.
- S. leptocarpa* (Nutt.) Gray
- S. perfoliata* (L.) A. DC.

## Cannabinaceae

- Humulus Lupulus* L.

## Capparidaceae

- Polanisia graveolens* Raf.

## Caprifoliaceae

- Lonicera japonica* Thunb.
- L. sempervirens* L.
- L. tatarica* L.
- L. tatarica* L. var. *micrantha*
- Sambucus canadensis* L.
- Symphoricarpos albus* (L.) Blake
- S. orbiculatus* Moench.
- Triosteum aurantiacum* Bickn.
- T. sp.*
- Viburnum Lentago* L.
- V. Opulus* L.
- V. prunifolium* L.
- V. rufidulum* Raf.
- V. theiferum* Rehd.
- V. tomentosum* Thunb.

## Caryophyllaceae

- Agrostemma Githago* L.
- Cerastium arvense* L.
- C. brachypodium* (Engelm.) Robins.
- C. nutans* Raf.
- C. vulgatum* L.
- Dianthus barbatus* L.
- Saponaria officinalis* L.
- Silene stellata* (L.) Ait. f.
- S. virginica* L.
- S. sp.*
- Stellaria media* (L.) Cyrillo

## Celastraceae

- Celastrus scandens* L.
- Euonymus atropurpureus* Jacq.

## Chenopodiaceae

- Chenopodium album* L.
- C. ambrosioides* L.
- C. ambrosioides* L. var. *anthelminticum* (L.) Gray
- C. Boscianum* Moq.
- Salsola Kali* L. var. *tenuifolia* Tausch.

## Cistaceae

- Helianthemum Bicknellii* Fern.

## Commelinaceae

- Commelina communis* L.
- Tradescantia bracteata* Small
- T. longipes* Anders. & Woodson
- T. ohimensis* Raf.
- T. virginiana* L.
- T. sp.*

## Compositae

- Achillea lanulosa* Nutt.
- A. Millefolium* L.
- Actinomeris alternifolia* (L.) DC.
- Agoseris* sp.
- Ambrosia artemisiifolia* L.
- A. bidentata* Michx.
- A. psilostachya* DC. var. *coronopifolia* (T. & G.) Farw.
- A. trifida* L.
- Antennaria campestris* Rydb.
- A. fallax* Greene
- A. neglecta* Greene
- A. plantaginifolia* (L.) Hook.
- A. rosulata*
- A. sp.*
- Anthemis Cotula* L.
- A. sp.*
- Arctium* sp.
- Aster ericoides* L.
- A. hemisphericus* E. J. Alex.
- A. hesperius* Gray
- A. ontarionis* Wieg.
- A. praealtus* Poir.
- A. simplex* Willd. var. *ramosissimus* (T. & G.) Cronq.
- A. sp.*
- Bidens polylepis* Blake
- Boltonia latisquama* Gray
- Cacalia tuberosa* Nutt.
- C. sp.*
- Carduus* sp.
- Centaurea Cyanus* L.
- C. maculosa* Lam.
- Chrysanthemum Leucanthemum* L.
- Chrysopsis Bakeri* Greene
- Cichorium Intybus* L.
- Cirsium altissimum* (L.) Spreng.
- C. undulatum* (Nutt.) Spreng.
- C. vulgare* (Savi) Tenore

## Compositae—Continued

- Coreopsis grandiflora* Hogg  
*C. tinctoria* Nutt.  
*C. verticillata* L.  
*Echinacea angustifolia* DC.  
*Eclipta alba* (L.) Hassk.  
*Engelmannia pinnatifida* T. & G.  
*Erechtites hieracifolia* (L.) Raf.  
*Erigeron annuus* (L.) Pers.  
*E. canadensis* L.  
*E. philadelphicus* L.  
*E. strigosus* Muhl.  
*E. sp.*  
*Eupatorium altissimum* L.  
*E. coelestinum* L.  
*E. maculatum* L.  
*E. perfoliatum* L.  
*E. rugosum* Houtt.  
*E. serotinum* Michx.  
*Gnaphalium obtusifolium* L. var. *praecox* Fern.  
*G. purpureum* L.  
*Grindelia lanceolata* Nutt  
*Gutierrezia dracunculoides* (DC.) Blake  
*Helenium autumnale* L.  
*H. nudiflorum* Nutt.  
*H. tenuifolium* Nutt.  
*H. sp.*  
*Helianthus annuus* L.  
*H. grosseserratus* Martens  
*H. hirsutus* Raf.  
*H. laetiflorus* Pers. var. *rigidus* (Cass.) Fern.  
*H. mollis* Lam.  
*H. petiolaris* Nutt.  
*H. tuberosus* L.  
*Hieracium longipilum* Torr.  
*Iva ciliata* Willd.  
*Krigia biflora* (Walt.) Blake  
*K. Dandelion* (L.) Nutt.  
*K. sp.*  
*Kuhnia eupatorioides* L. var. *corymbulosa* T. & G.  
*Lactuca canadensis* L.  
*L. floridana* (L.) Gaertn.  
*L. ludoviciana* (Nutt.) Riddell  
*L. scariola* L.  
*Liatris aspera* Michx.  
*L. kansana* (Britt.) Rydb.  
*L. pycnostachya* Michx.

## Compositae—Concluded

- L. squarrosa* (L.) Michx. var. *hirsuta* Rydb.  
*Palafoxia callosa* (Nutt.) T. & G.  
*Pyrrhopappus carolinianus* (Walt.) DC.  
*P. grandiflorus* Nutt.  
*P. sp.*  
*Ratibida columnifera* (Nutt.) Wootton & Standl.  
*R. pinnata* (Vent.) Barnh.  
*Rudbeckia amplexicaulis* Vahl  
*R. fulgida* Ait.  
*R. hirta* L.  
*R. laciniata* L.  
*Senecio aureus* L.  
*S. pauperculus* Michx.  
*S. sp.*  
*Serinia oppositifolia* (Raf.) Ktze.  
*Silphium integrifolium* Michx.  
*S. laciniatum* L.  
*S. terebinthinaceum* Jacq.  
*Solidago canadensis* L.  
*S. canadensis* L. var. *gilvocanescens* Rydb.  
*S. gigantea* Ait. var. *leiophylla* Fern.  
*S. gymnospermoides* (Greene) Fern.  
*S. missouriensis* Nutt. var. *fasciculata* Holzinger  
*S. nemoralis* Ait.  
*S. petiolaris* Ait.  
*S. rigida* L.  
*S. speciosa* Nutt. var. *angustata* T. & G.  
*S. tenuifolia* Pursh  
*S. sp.*  
*Sonchus asper* (L.) Hill  
*S. oleraceus* L.  
*Tanacetum vulgare* L.  
*Taraxacum officinale* Weber  
*Townsendia exscapa* (Richards.) Porter  
*Verbesina virginica* L.  
*Vernonia Baldwini* Torr.  
*V. crinita* Raf.  
*V. fasciculata* Michx.  
*V. flaccidifolia* Small  
*V. missurica* Raf.  
*Xanthium italicum* Moretti  
*X. pensylvanicum* Wallr.  
 Convolvulaceae  
*Convolvulus arvensis* L.

Convolvulaceae—*Concluded*

- C. sepium* L.
- Cuscuta Gronovii* Willd.
- C. glomerata* Choisy
- C. polygonorum* Engelm.
- C. sp.*
- Ipomoea hederacea* (L.) Jacq.
- I. pandurata* (L.) G. F. W. Mey.

## Cornaceae

- Cornus Amomum* Mill.
- C. Drummondii* Meyer
- C. florida* L.
- C. stolonifera* Michx.
- C. sp.*

## Corylaceae

- Alnus* sp.
- Betula nigra* L.
- B. pendula* Roth
- B. populifolia* Marsh.
- Corylus americana* Walt.

## Crassulaceae

- Sedum pulchellum* Michx.

## Cruciferae

- Barbarea vulgaris* R. Br.
- Berteroa incana* (L.) DC.
- Capsella Bursa-pastoris* (L.) Medic.
- Cardamine parviflora* L.
- Cardaria Draba* (L.) Desv.
- Dentaria laciniata* Muhl.
- Draba brachycarpa* Nutt.
- D. cuneifolia* Nutt.
- D. reptans* (Lam.) Fern.
- Erysimum repandum* L.
- Iberis amara* L.
- Lepidium densiflorum* Schrad.
- L. texanum* Buckl.
- L. virginicum* L.
- Lesquerella* sp.
- Nasturtium officinale* R. Br.
- Sibara virginica* (L.) Rollins
- Sophia intermedia* Rydb.
- Thlaspi arvense* L.
- T. sp.*

## Cyperaceae

- Cyperus esculentus* L.
- C. sp.*
- Eleocharis obtusa* (Willd.) Schultes
- E. ovata* (Roth) R. & S.
- E. parvula* (R. & S.) Link
- E. Smallii* Britt.

## Ebenaceae

- Diospyros virginiana* L.

## Elaeagnaceae

- Elaeagnus angustifolia* L.

## Ericaceae

- Arctostaphylos* sp.
- Calluna vulgaris* (L.) Hull
- Kalmia latifolia* L.
- Rhododendron indicum* sweet

## Euphorbiaceae

- Acalypha gracilens* Gray
- Croton capitatus* Michx.
- C. monanthogynus* Michx.
- C. sp.*
- Euphorbia Chamaesyce* L.
- E. commutata* Engelm.
- E. corollata* L.
- E. Cyparissias* L.
- E. dentata* Michx.
- E. maculata* L.
- E. marginata* Pursh
- E. stictospora* Engelm.
- E. sp.*

## Fagaceae

- Quercus falcata* Michx.
- Q. imbricaria* Michx.
- Q. lyrata* Walt.
- Q. macrocarpa* Michx.
- Q. marilandica* Muenchh.
- Q. Michauxii* Nutt.
- Q. Muehlenbergii* Engelm.
- Q. palustris* Muenchh.
- Q. rubra* L.
- Q. stellata* Wang.
- Q. velutina* Lam.

## Gentianaceae

- Gentiana Andrewsii* Griseb.
- G. crinita* Froel.
- G. decora* Pollard
- G. procera* Holm
- Sabatia campestris* Natt.

## Geraniaceae

- Geranium carolinianum* L.
- G. maculatum* L.
- G. sp.*

## Gramineae

- Agropyron cristatum* (L.) Gaertn.
- Agrostis* sp.
- Alopecurus carolinianus* Walt.
- Andropogon Gerardi* Vitman
- A. ishaemum*

## Andropogon Gerardi Vitman—

*Concluded*

- A. micranthus
- A. scoparius Michx.
- Bouteloua curtipendula (Michx.) Torr.
- B. gracilis (HBK.) Lag.
- B. hirsuta Lag.
- Bromus inermis Leyss.
- Buchloë dactyloides (Nutt.) Engelm.
- Cenchrus pauciflorus Benth.
- Chloris Barrai
- C. verticillata Nutt.
- Dactylis glomerata L.
- Digitaria sanguinalis (L.) Scop.
- Echinochloa crusgalli (L.) Beauv.
- Eleusine indica (L.) Gaertn.
- Elymus canadensis L.
- E. villosus Muhl.
- Eragrostis curriula
- Festuca elatior L.
- Hystrix patula Moench
- Lolium perenne L.
- Panicum dichotomiflorum Michx.
- P. virgatum L.
- P. sp.
- Paspalum floridanum Michx. var. glabratum Engelm.
- Phleum pratense L.
- Poa pratensis L.
- Setaria macrostachya
- S. sp.
- Sorghastrum nutans (L.) Nash
- Spartina pectinata Link

## Guttiferae

- Hypericum mutilum L.
- H. punctatum Lam.
- H. punctatum Lam. var. pseudomaculatum (Bush) Fern.
- H. spathulatum (Spach) Steud.

## Haloragaceae

- Myriophyllum pinnatum (Walt.) BSP.

## Hamamelidaceae

- Hamamelis virginiana L.
- Liquidambar styraciflua L.

## Hippocastanaceae

- Aesculus glabra Willd. var. Sargentii Rehd.

## Hydrocharitaceae

- Elodea canadensis Michx.

## Hydrophyllaceae

- Ellisia nyctelea L.
- Hydrolea ovata Nutt.
- Hydrophyllum virginianum L.
- H. sp.
- Phacelia hirsuta Nutt.

## Iridaceae

- Iris germanica L.
- I. missouriensis Nutt.
- I. sp.
- Nemastylis geminiflora Nutt.
- Sisyrinchium angustifolium Mill.
- S. campestre Bickn.

## Juglandaceae

- Carya cordiformis (Wang.) K. Koch
- C. glabra (Mill.) Sweet
- C. illinoensis (Wang.) K. Koch
- C. laciniosa (Michx.) Loud.
- Juglans nigra L.

## Juncaceae

- Juncus Torreyi Coville
- J. sp.

## Labiatae

- Agastache scrophulariaefolia (Willd.) Ktze.
- Glechoma hederacea L.
- Lamium amplexicaule L.
- Lycopus asper Greene
- L. rubellus Moench
- L. virginicus L.
- L. sp.
- Mentha arvensis L. var. villosa (Benth.) S. R. Stewart f. glabrata (Benth.) S. R. Stewart
- M. piperita L.
- M. spicata L.
- Monarda didyma L.
- M. fistulosa L. var. mollis (L.) Benth.
- M. media Willd.
- M. punctata L.
- M. punctata L. var. lasiodonta Gray
- Nepeta cataria L.
- Physostegia denticulata (Ait.) Britt.
- P. intermedia (Nutt.) Engelm. & Gray
- P. virginiana (L.) Benth.
- Prunella vulgaris L.
- Pycnanthemum flexuosum (Walt.) BSP.
- P. pilosum Nutt.
- P. virginianum (L.) Durand & Jackson

Labiatae—*Concluded*

- Salvia azurea Lam. var. grandiflora Benth.
- S. reflexa Hornem.
- Scutellaria incana Biehler
- S. nervosa Pursh
- S. ovata Hill var. versicolor (Nutt.) Fern.
- S. sp.
- Stachys germanica L.
- Teucrium canadense L.

## Lauraceae

- Lindera benzoin (L.) Blume
- Sassafras albidum (Nutt.) Nees

## Leguminosae

- Amorpha canescens Pursh
- A. fruticosa L. var. angustifolia Pursh
- Apios americana Medic.
- Astragalus canadensis L.
- A. lotiflorus Hook.
- A. plattensis Nutt.
- A. racemosus Pursh
- A. sp.
- Baptisia leucantha T. & G.
- B. leucophaea Nutt.
- B. minor Lehm.
- Cassia fasciculata Michx.
- C. marilandica L.
- C. nictitans L.
- Cercis canadensis L.
- Clitoria mariana L.
- Crotalaria sagittalis L.
- Desmanthus illinoensis (Michx.) Mac M.
- D. sp.
- Desmodium canadense (L.) DC.
- D. cuspidatum (Muhl.) Loud.
- D. nudiflorum (L.) DC.
- D. sessilifolium (Torr.) T. & G.
- Gleditsia triacanthos L.
- Gymnocladus dioica (L.) K. Koch
- Lathyrus latifolius L.
- Lespedeza capitata Michx.
- L. hirta (L.) Hornem.
- L. striata (Thumb.) H. & A.
- L. virginica (L.) Britt.
- L. sp.
- Lotus americanus (Nutt.) Bisch.
- Medicago sativa L.
- Melilotus alba Desr.
- M. officinalis (L.) Lam.

Leguminosae—*Concluded*

- Petalostemum candidum (Willd.) Michx.
- P. pulcherrimum Heller
- P. purpureum (Vent.) Rydb.
- Phaseolus polystachios (L.) BSP.
- Psoralea psoraloides (Walt.) Cory
- P. tenuiflora Pursh
- P. tenuiflora Pursh var. floribunda (Nutt.) Rydb.
- Pueraria lobata (Willd.) Ohwi
- Robinia hispida L.
- R. Pseudo-Acacia L.
- Schrankia Nuttallii (DC.) Standl.
- Sesbania exaltata (Raf.) Cory
- Sophora sericea Nutt.
- Strophostyles helvola (L.) Ell.
- S. helvola (L.) Ell. var. missouriensis (S. Wats.) Britt.
- S. leiosperma (T. & G.) Piper
- Tephrosia virginiana (L.) Pers.
- T. virginiana (L.) Pers. var. holosericea (Nutt.) T. & G.
- Thermopsis sp.
- Trifolium carolinianum Michx.
- T. medium L.
- T. pratense L.
- T. procumbens L.
- T. reflexum L.
- T. repens L.
- Vicia Cracca L.

## Liliaceae

- Allium canadense L.
- A. cernuum Roth
- A. mutabile Michx.
- A. stellatum Fraser
- A. vineale L.
- A. sp.
- Asparagus officinalis L.
- Camassia scilloides (Raf.) Cory
- Erythronium albidum Nutt.
- E. albidum Nutt. var. mesochoreum (Knerr) Rickett
- Hemerocallis fulva L.
- Lilium michiganense Farw.
- L. philadelphicum L.
- Melanthium virginicum L.
- Muscari botryoides (L.) Mill.
- Nothoscordum bivalve (L.) Britt.
- Ornithogalum umbellatum L.
- Polygonatum biflorum (Walt.) Ell

Liliaceae—*Concluded*

- P. canaliculatum* (Muhl.) Pursh
- Smilacina racemosa* (L.) Desf.
- S. sp.*
- Smilax herbacea* L.
- S. tamnoides* L. var. *hispida* (Muhl.) Fern.

*Trillium recurvatum* Beck

*T. sessile* L.

*T. viride* Beck

*Uvularia grandiflora* Sm.

*Veratrum sp.*

*Yucca filamentosa* L.

*Zigadenus Nuttallii* Gray

## Magnoliaceae

*Liriodendron Tulipifera* L.

*Magnolia Fraseri* Walt.

*M. virginiana* L.

*M. sp.*

## Malvaceae

*Abutilon Theophrasti* Medic.

*Callirhoe digitata* Nutt.

*C. involucrata* (T. & G.) Gray

*Hibiscus militaris* Cav.

*H. Moscheutos* L.

*H. syriacus* L.

*H. Trionum* L.

*Malvastrum sp.*

## Marantaceae

*Thalia dealbata* Roscoe

## Menispermaceae

*Cocculus carolinus* (L.) DC.

*Menispermum canadense* L.

## Moraceae

*Broussonetia papyrifera* (L.) Vent.

*Machura pomifera* (Raf.) Schneid.

*Morus alba* L.

*M. nigra* L.

*M. rubra* L.

## Nyctaginaceae

*Mirabilis albida* (Walt.) Heimerl

*M. nyctaginea* (Michx.) MacM.

## Nymphaeaceae

*Nelumbo lutea* (Willd.) Pers.

*Nuphar advena* (Ait.) Ait. f.

## Nyssaceae

*Nyssa sylvatica* Marsh.

## Oleaceae

*Chionanthus virginicus* L.

*Forestiera acuminata* (Michx.) Poir.

Oleaceae—*Concluded*

*Fraxinus americana* L.

*F. pennsylvanica* Marsh.

*F. pennsylvanica* Marsh. var.

*tegerrima* (Vahl) Fern.

*Syringa vulgaris* L.

## Onagraceae

*Gaura biennis* L.

*G. sinuata* Nutt.

*Jussiaea repens* L. var. *glabrescens*

Ktze.

*Ludwigia alternifolia* L.

*L. palustris* (L.) Ell. var. *americana*

(DC.) Fern. & Grise.

*Oenothera biennis* L.

*O. biennis* L. var. *hirsutissima* Gr.

*O. laciniata* Hill

*O. missouriensis* Sims.

*O. Nuttallii* Sweet

*O. speciosa* Nutt.

## Orchidaceae

*Corallorhiza Wisteriana* Conrad

*Cypripedium arietinum* R. Br.

*C. Calceolus* L. var. *parvillorum*

(Salisb.) Fern.

*C. Calceolus* L. var. *pubescens*

(Willd.) Correll

*C. candidum* Muhl.

*C. reginae* Walt.

*Epipactis Helleborine* (L.) Griseb.

*Habenaria ciliaris* (L.) R. Br.

*Spiranthes cernua* (L.) Richard

*ochroleuca* (Rydb.) Ames

*S. gracilis* (Bigel.) Beck

*S. vernalis* Engelm. & Gray

## Orobanchaceae

*Epifagus virginiana* (L.) Bart.

## Oxalidaceae

*Oxalis corniculata* L.

*O. stricta* L.

*O. violacea* L.

## Papaveraceae

*Corydalis aurea* Willd.

*C. crystallina* Engelm.

*C. micrantha* (Engelm.) Gray

*C. sp.*

*Dicentra Cucullaria* (L.) Bernh.

## Passifloraceae

*Passiflora incarnata* L.

## Phrymaceae

*Phryma Leptostachya* L.

- Phytolaccaceae  
*Phytolacca americana* L.  
 Plantaginaceae  
*Plantago aristata* Michx.  
*P. lanceolata* L.  
*P. major* L.  
*P. Purshii* R. & S.  
*P. rhodosperma* Dcne.  
*P. Rugelii* Dcne.  
 Platanaceae  
*Platanus occidentalis* L.  
 Polemoniaceae  
*Phlox divaricata* L.  
*P. maculata* L.  
*P. paniculata* L.  
*P. pilosa* L.  
*P. sp.*  
*Polemonium reptans* L.  
 Polygalaceae  
*Polygala incarnata* L.  
*P. sanguinea* L.  
 Polygonaceae  
*Eriogonum* sp.  
*Polygonum aviculare* L.  
*P. coccineum* Muhl.  
*P. Convolvulus* L.  
*P. Hydropiper* L.  
*P. hydropiperoides* Michx.  
*P. longistylum* Small  
*P. pennsylvanicum* L.  
*P. punctatum* Ell.  
*P. scandens* L.  
*P. sp.*  
*Rumex Acetosella* L.  
*R. altissimus* Wood  
*R. crispus* L.  
*R. obtusifolius* L.  
*R. sp.*  
*Tovara virginiana* (L.) Raf.  
 Portulacaceae  
*Claytonia virginica* L.  
*Montia Chomissoi* (Ledeb.) Durand  
 & Jackson  
 Primulaceae  
*Androsace occidentalis* Pursh  
*Dodecatheon Meadia* L.  
*Lysimachia Nummularia* L.  
*L. sp.*  
*Samolus parviflorus* Raf.  
 Pyrolaceae  
*Monotropa uniflora* L.
- Ranunculaceae  
*Anemone caroliniana* Walt.  
*A. patens* L. var. *Wolfgangiana*  
 (Bess.) Koch  
*Anemonella thalictroides* (L.) Spach  
*Aquilegia canadensis* L. var. *latiuscula*  
 (Greene) Munz  
*A. vulgaris* L.  
*Caltha palustris* L.  
*Clematis Pitcheri* T. & G.  
*C. Viorna* L.  
*C. sp.*  
*Delphinium Ajacis* L.  
*D. exaltatum* Ait.  
*D. tricornis* Michx.  
*D. virescens* Nutt.  
*Hepatica americana* (DC.) Ker  
*Myosurus minimus* L.  
*Ranunculus abortivus* L.  
*R. fascicularis* Muhl.  
*R. septentrionalis* Poir.  
 Rhamnaceae  
*Ceanothus americanus* L.  
*Rhamnus cathartica* L.  
 Rosaceae  
*Agrimonia pubescens* Wallr.  
*A. sp.*  
*Crataegus Calpodendron* (Ehrh.)  
 Medic. var. *globosa* (Sarg.) Palmer  
*C. crus-galli* L.  
*C. pruinosa* (Wendl.) K. Koch  
*C. sangonea*  
*C. sp.*  
*Cydonia japonica* Lindl.  
*Fragaria vesca* L. var. *americana*  
 Porter  
*F. virginiana* Duchesne var. *illinoensis*  
 (Prince) Gray  
*Geum canadense* Jacq.  
*G. triflorum* Pursh  
*Gillenia stipulata* (Muhl.) Baill.  
*Potentilla canadensis* L.  
*P. norvegica* L.  
*P. simplex* Michx.  
*P. tridentata* Ait.  
*Prunus americana* Marsh.  
*P. americana* Marsh. var. *lanata* Sudw.  
*P. Davidiana* Franch.  
*P. hortulana* Bailey  
*P. Persica* (L.) Batsch  
*P. serotina* Ehrh.



Rosaceae—*Concluded*

- P. virginiana* L.
- Rosa arkansana* Porter var. *suffulta* (Greene) Cockerell
- R. carolina* L.
- R. Eglanteria* L.
- R. palustris* Marsh.
- R. setigera* Michx.
- R. virginiana* Mill.
- R. sp.*
- Rubus argutus* Link
- R. flagellaris* Willd.
- R. frondosus* Bigel.
- R. occidentalis* L.
- R. sp.*
- Spiraea Billardii* Herincg.
- S. Douglasii* Hook.
- S. Menziesii* Hook.
- S. prunifolia* Sieb. & Zucc.
- S. salicifolia* L.
- S. Vanhouttei* Zabel.
- S. sp.*

## Rubiaceae

- Cephalanthus occidentalis* L.
- Diodia teres* Walt.
- Galium Aparine* L.
- G. sylvaticum* L.
- G. verum* L.
- Houstonia longifolia* Gaertn.
- H. minima* Beck.

## Rutaceae

- Xanthoxylum americanum* Mill.

## Salicaceae

- Populus alba* L.
- P. alba* L. var. *Bolleana* Lauche.
- P. balsamifera* L.
- P. deltoides* Marsh.
- P. nigra* L. var. *italica* Muenchh.
- P. Sargentii* Dode
- Salix alba* L. var. *calva* G. F. W. Mey.
- S. alba* L. var. *vitellina* (L.) Stokes
- S. amygdaloides* Anderss.
- S. babylonica* L.
- S. fragilis* L.
- S. interior* Rowlee
- S. nigra* Marsh.
- S. sp.*

## Santalaceae

- Comandra* sp.

## Saururaceae

- Saururus cernuus* L.

## Saxifragaceae

- Heuchera* sp.
- Philadelphus Lewisii* Pursh.
- Ribes missouriense* Nutt.

## Scrophulariaceae

- Buchnera americana* L.
- Castilleja coccinea* (L.) Spreng.
- Collinsia violacea* Nutt.
- Digitalis purpurea* L.
- Gerardia Skinneriana* Wood.
- Linaria canadensis* (L.) Dumont
- L. canadensis* (L.) Dumont var. *texana* (Scheele) Pennell
- L. vulgaris* Hill
- Mimulus ringens* L.
- Pedicularis canadensis* L.
- Penstemon Cobaea* Nutt.
- P. Digitalis* Nutt.
- P. grandiflorus* Nutt.
- P. tubaeiflorus* Nutt.
- Scrophularia marilandica* L.
- Verbascum Blattaria* L.
- V. Thapsus* L.
- Veronica arvensis* L.
- V. officinalis* L.
- Veronicastrum virginicum* (L.) Far.

## Simaroubaceae

- Ailanthus altissima* (Mill.) Swingle

## Solanaceae

- Datura Stramonium* L.
- D. Stramonium* L. var. *Tatula* (L.) L.
- Nicotiana Tabacum* L.
- Physalis barbadensis* Jacq.
- P. heterophylla* Nees
- P. ixocarpa* Brotero
- P. macrophysa* Rydb.
- P. pubescens* L.
- Solanum carolinense* L.
- S. elaeagnifolium* Cav.
- S. interius* Rydb.
- S. nigrum* L.
- S. rostratum* Dunal
- S. Torreyi* Gray
- S. tuberosum* L.

## Staphyleaceae

- Staphylea trifolia* L.

## Tiliaceae

- Tilia americana* L.

## Typhaceae

- Typha angustifolia* L.
- T. latifolia* L.



## Ulmaceae

- Celtis occidentalis* L.  
*Ulmus alata* Michx.  
*U. americana* L.  
*U. pumila* L.  
*U. rubra* Muhl.  
*Zelkova serrata*

## Umbelliferae

- Cicuta maculata* L.  
*C. sp.*  
*Daucus Carota* L.  
*Eryngium yuccifolium* Michx.  
*Lomatium orientale* C. & R.  
*Polytaenia Nuttallii* DC.  
*Ptilimnium capillaceum* (Michx.) Raf.  
*P. Nuttallii* (DC.) Britt.  
*Sanicula canadensis* L.  
*Spermolepis echinata* (Nutt.) Heller  
*Thaspium pinnatifidum* (Buckl.) Gray  
*T. sp.*  
*Zizia aurea* (L.) W. D. J. Koch

## Urticaceae

- Boehmeria cylindrica* (L.) Sw.  
*B. cylindrica* (L.) Sw. var. *Drummondiana* Wedd.

## Valerianaceae

- Valeriana ciliata* T. & G.  
*V. sp.*  
*Valerianella radiata* (L.) Dufr.

## Verbenaceae

- Lippia lanceolata* Michx.  
*Verbena bracteata* Lag. & Rodr.  
*V. bracteata* × *hastata*  
*V. canadensis* (L.) Britt.  
*V. hastata* L.  
*V. hastata* × *stricta*  
*V. officinalis* L.  
*V. simplex* Lehm.  
*V. stricta* Vent.  
*V. urticifolia* L.  
*V. sp.*

## Violaceae

- Hybanthus concolor* (T. F. Forst.) Spreng.  
*Viola canadensis* L.  
*V. Kitaibeliana* R. & S. var. *Rafinesquii* (Greene) Fern.  
*V. papilionacea* Pursh  
*V. pedata* L.  
*V. pensylvanica* Michx.  
*V. sagittata* Ait.

Violaceae—*Concluded*

- V. sororia* Willd.  
*V. sylvestris* Lam.

## Vitaceae

- Ampelopsis cordata* Michx.  
*Parthenocissus quinquefolia* (L.) Planch.  
*P. tricuspidata* (Sieb. & Zucc.) Planch.  
*Vitis cinerea* Engelm.  
*V. vulpina* L.

## Zygophyllaceae

- Tribulus terrestris* L.

	Totals
Families .....	120
Genera .....	421
Species and varieties .....	775
Genera with undetermined specimens (sp.) .....	70

## CONCLUSION

This list shows certain obvious shortcomings of the herbarium. Among these are the absence of certain common weeds and inconspicuous herbs, as well as many species of groups which are so specialized that their identification is difficult by beginning students. Such groups include the grasses, sedges, aquatic plants, nettles, goosefoots (or is it geese feet?), mustards, blackberries, parsleys and others. Efforts are being made to close these gaps, and considerable improvement in this direction has recently occurred.

In spite of these gaps, the herbarium has reached the condition where it is now being used for the identification of the plants of this area. It is open for this purpose to anyone who knows how to use a herbarium. For those who do not, but are nevertheless interested in plants, a specimen brought in by a visit or letter is identified by a member of the staff as a service by the

college. Unique or interesting specimens from any southeastern county, or any near-by county in adjacent states, are desired for permanent additions to the herbarium.

It should be noted, however, that this herbarium does not include cultivated or horticultural varieties, and that these cannot well be iden-

tified here. At present, the same applies to the algae, fungi, liverworts, and mosses. The scope of activity is limited at present to the trees, shrubs, flowers, grasses, ferns and weeds growing in a more or less wild condition in southeastern Kansas and adjacent areas.

# Government Documents and You

BETTY BESSE BENNETT

The Government Printing Office is the world's most prolific publisher. Its annual output is numbered in the millions, and its publications are among the most important of all written records. Government documents not only provide source materials about the government and its activities, but also cover many fields of knowledge which are of interest to the public as well as to the business, scientific, and educational worlds. Yet there is no class of reference material that is so consistently avoided by librarians and library patrons as government documents.

Familiarity with documents is an essential feature of any adequate library reference service. The enormous quantity, the perplexing methods of publication and distribution, the multitude of subjects covered, and the variation in the value of government documents make the attainment of knowledge a somewhat difficult task.

In order to make it easier to find government documents, the *Monthly Catalog* has been revised and an index added to each issue. In recent years the Government Printing Office has been advertising its publications quite extensively in periodicals, press releases, and sales catalogues on various subjects.

People now are far more aware of government documents than they were several years ago. Occasionally the Government prints a report

that causes a great deal of discussion and comment. Do you remember the Smythe report on atomic energy, the State Department's "Blue Book" on Argentina, the Hoover Commission reports, Secretary of the Interior Ewing's report on the nation's health and socialized medicine, and the report of the President's Commission on Civil Rights? When once introduced to documents, people are usually amazed by the wealth of material available to them and find documents interesting and satisfying. This is due to the attractiveness of their "new" appearance and to the readability of their content, as well as to the authoritativeness with which they present information of current interest. Documents are now published in various shapes and forms. The publications range from small plain two page leaflets to bright covered books full of pictures and colored illustrations. The *Agricultural Yearbooks* are examples of the latter type. Since 1938 each yearbook has been devoted to a single topic, such as *Soils*, and *Climate and Man*, which have become very popular.

It is hard to define the subject areas treated in government documents. They vary from scientific and technical data in many fields to instruction and guidance in all sorts of practical activities from buying men's suits to operating a beauty shop.

Each department has its own general subject area, but occasionally branches out into other fields. The Agriculture Department has been able to satisfy the farmer with pamphlets on the technical and practical aspects of farming, but pleasing the farmer's wife has been another matter. They have published pamphlets on vegetables and flower gardens, cooking, budgeting, consumer buying guides, housecleaning, laundering, sewing, and building or remodeling a home.

Besides its technical material, the Atomic Energy Commission released two titles in 1950 on the *Effects of Atomic Weapons*, and *Control of Radiation Hazards in Atomic Energy Program*. These are interesting and timely topics, but the Commission's reports in a specialized field cannot compare with the wide variety of subjects covered by the Army. In the Army's *Field Manuals* and *Technical Manuals* there is material on foreign languages, judo, criminal investigation, outboard motors, hospital diets, a beginning reader for adults, cookbooks with recipes based on 100 servings, and engines of all kinds and descriptions.

The Commerce Department publications alone form a small library. Here one will find census statistics, aviation material, patents, commercial standards specifications, future plans for the public highway system, weather information, statistics and advice on all phases of domestic and foreign trade, and

guides to help solve the problems of the small businessman.

The publications of Congress are varied and often surprising. From 1946-1948 it presented in eleven pamphlets a study and analysis of Communism in the Soviet Union, the United States, and the world. In 1950, *Senate Document 197*, 81st Congress, was titled "Present Status of Color Television."

The Federal Security Agency is another large distributor because it has the Office of Education, Public Health Service, Social Security Administration, and the Children's Bureau within its jurisdiction. Rather than try to describe all the subject fields covered by these bureaus, a few distinctive titles are listed. In the 1949 and 1950 *Bulletin Series* of the Office of Education are found "Education in Bolivia," "Survey of Co-operative Engineering Education," and "102 Motion Pictures on Democracy." In 1950 the National Institutes of Health published the *Challenge of Cancer* which tells the how, what, and why of cancer research. The *Children's Bureau Bulletins*, titled "Prenatal Care," "Infant Care," and "Your Child from 1 to 6," have been Government Printing Office best sellers. "Your Child from 6 to 12" was added to the series in 1949.

Most of the Interior Department publications are technical, especially the ones written by the Geological Survey, the Bureau of Mines, and the Bureau of Reclamation. However, the publications of the

National Park Service are very attractive, easy reading and form a basis for a travel collection.

The Labor Department is usually thought of in terms of collective bargaining, labor legislation, and labor statistics. In recent years the Bureau of Labor Statistics has been publishing a great deal of material on occupations, job description, and employment opportunities, while the Women's Bureau has been concerned with occupations suitable for women and the legal status of women.

While the Library of Congress has been a chief source of bibliographies, it has also been publishing the *Public Affairs Bulletins* which give excellent background summaries on current subjects. Three of the titles released in April and June, 1950, were "Brannan Plan, Proposed Farm Program," "Reform of Federal Budget," and "Welfare State, Case for and Against."

One of the most popular publica-

tions of the Navy Department has been its two volumes on *Photography* published in 1947. Like the Army Department, the Navy Department publications cover many fields. In 1950, *Music Theory*, prepared by the Navy School of Music was released, while the government's newest best seller was *United States Civil Defense* published by the National Security Resources Board.

This brief summary of some of the subjects and titles found in government documents may help you understand why some people consider that they contain the history of civilization itself in all its aspects. The publications are the reliable, up-to-date, inexpensive sources of the political, economic, and social history of the United States. As educators and librarians realize the increasing importance of government documents in reference and research work and learn to use them effectively, a vast new wealth of source material will be available.

# Home and Family Life: A Bibliography

DOROTHY GENEVIEVE DIXON

Increasing emphasis is being given to the study of home and family life in both the sociology (or social studies) and home economics departments. Landis in a research study of teachers college curricula found that about one half of the sociology departments and one third of the home economics departments offer courses on the family and marriage.<sup>1</sup> While in college the sociology courses deal primarily with the family as a social institution and the home economics courses with family relationships, the distinction is not so discretely evident in high school curricula.

In the area of home and family life education in elementary and junior-senior high school there are three noteworthy published bibliographies. Two are old at the present time but suggestive of types of useful materials, while the third is concerned primarily with intergroup understandings. *Books on Home and Family Life*, compiled by Ruth Budd, was published by the Columbia University press in 1937. The list is in two parts: the elementary school and the junior high school. Each part is arranged by topics and the books are annotated. Christine B. Gilbert com-

plied a supplement of new materials in 1942.

*The Librarian and the Teacher of Home Economics*, by Frances Henne and Margaret Pritchard, was published by the American Library Association in 1945 as a number in the Experimenting Together Series. It includes a selected list of books for junior high school as well as gives a good picture of the cooperation between a librarian and a teacher of home economics in one school.

*Reading Ladders for Human Relations* is the work of the Intergroup Education Project of the American Council on Education. The books listed have been tested in many schools sharing in the project. The bibliography was first published in 1947 and completely revised in 1949. The arrangement is by the following topics: Patterns of Family Life, Community Contrasts, Economic Differences, Differences Between Generations, Adjustment to New Places and Situations, How It Feels to Grow Up, Belonging to Groups and Experiences in Acceptance and Rejection. The books represent a broad range in cultural, religious, and racial background and are listed, as the title states, in ladder form from the easiest both in readability and in concept, to the more difficult and complex. The

1. Landis, J. T. "The Teaching of Family and Marriage Courses by Sociologists and Home Economists." *Social Forces* 24: 336-39; March 1946.



introduction and preface to each topic together with annotations give adequate information about using the books listed.

*Note.*—Since this manuscript was prepared a fourth publication, *Books of Fiction Dealing With Home and Family Living*, has been issued by the American Home Economics Association.

This summer at the request of a Home Economics Family Life Workshop in South Dakota the following bibliography was prepared and presented. Its purpose is to include novels that depict different types of family patterns and family relationships for use with high-school classes. Although the list is made with the middle west agricultural community in mind it is not limited exclusively to it. The books are those girls in high school like to read, with consideration given to the range of their reading abilities. The present bibliography is in addition to, rather than a duplication of, the above-mentioned lists.

#### NOVELS DEALING WITH PROBLEMS OF FAMILY LIFE

Aldis, Dorothy. *Time at Her Heels*. Houghton, 1937.

A day in the life of a busy housewife.

Aldrich, B. S. *A Lantern in Her Hand*. Appleton, 1928.

Abbie Deal, against the background of early Nebraska, witnesses changes in her family and in the world about her.

Aldrich, B. S. *Mother Mason*. Appleton, 1924.

A picture of homey, prosperous, family life in a middle western town. Mother Mason is old-fashioned enough to count for a great deal in the life of each of her five children, and modern enough to let their individualities alone.

Aldrich, B. S. *A White Bird Flying*. Appleton, 1931.

Sequel to *A Lantern in Her Hand*. Follows the story of Abbie's granddaughter in her efforts to resist the fulfillment of her mother's social ambitions for her.

Allee, M. H. *Jane's Island*. Houghton, 1931.

Story of a family's summer at Wood's Hole, Cape Cod, where there is a Marine Laboratory.

Allen, Adam. *Dynamo Farm*. Lippincott, 1942.

A 4-H story describing an urban family's adjustment to farm life.

Allen, Adam. *Water to Burn*. Lippincott, 1943.

A story of building a dam to control the water supply on a farm.

\*Asch, Sholem. *East River*. Putnam, 1946.

Respect for parental wishes and inability to accede to them sometimes leads to maladjustment. This is a heart-warming story of a Jewish father's gradual adjustment to his son's marriage to a Catholic girl.

\*Aydelotte, Dora. *Measure of a Man*. Appleton, 1942.

Family life in a midwestern town just before the turn of the century.

\* Recommended for mature readers.

Place of the family in community life.

Barnes, Nancy. *The Wonderful Year*. Messner, 1946.

The growing-up story of a little girl who, with her family, left her home in Kansas to live on a fruit farm in Colorado. It portrays the pleasures to be found in camping and in building a new home.

Benson, Sally. *Junior Miss*. Random House, 1941.

Stories about the Graves family—a youngish mother and father and their two daughters, Lois, a superior 16, and Judy, just 14.

Bianco, M. W. *Winterbound*. Viking, 1936.

Alone in an old country house during a severe Connecticut winter, four children face a real test and bravely meet every emergency which arises during their mother's prolonged absence in the west.

Bird, D. M. *Granite Harbor*. Macmillan, 1944.

A story of winter sports and happy high school life in a small town on Lake Superior.

Bryant, Bernice. *Trudy Terrill, Eighth Grader*. Bobbs, 1946.

The story of Trudy, her little brother, and her parents. Followed by *Trudy Terrill, High School Freshman* (1948).

Carroll, G. H. *As the Earth Turns*. Macmillan, 1933.

One year in the life of a Maine farm family.

Carroll, G. H. *While the Angels Sing*. Macmillan, 1947.

A picture of a modern American family's preparation for Christmas.

Case, J. F. *Under the 4-H Flag*. Lippincott, 1927.

A new family finds its place in a farm community.

Cavanna, Betty. *Going on Sixteen*. Westminster, 1927.

The problems of a motherless teen-age girl are well handled in this modern story.

Cavanna, Betty. *Spurs for Suzanna*. Westminster, 1947.

Fifteen-year-old Suzanna is the only child of parents living in Philadelphia amidst comfortable, pleasant surroundings. This is the story of the family's summer, in which Suzanna learns to grow up.

Chevans, Martha. *Crosswinds*. Houghton, 1948.

Wholesome story of a minister's family in a town on the American side of the Texas-Mexico border.

Coffin, R. P. T. *Lost Paradise*. Macmillan, 1938.

A boyhood on a New England farm.

Corey, Paul. *Corn Gold Farm*. Morrow, 1948.

Earl Blake and his father risk the scorn of their neighbors to build up a worn-out farm they inherited. Good picture of family life.

Corey, Paul. *Five Acre Hill*. Morrow, 1946.

A family project in building a home in the country. Written to stress pulling together, neighborliness, and elimination of class and race prejudices.



Corey, Paul. *Shad Haul*. Morrow, 1947.

Two high school boys form a community co-operative for shad fishing, and earn enough money for college.

Daly, Maureen. *Seventeenth Summer*. Dodd, 1942.

Love comes to a sensitive girl of seventeen. A charming and wholly convincing story of young people.

De la Roche, Mazo. *Jalna*. Little, 1927.

The Whiteoaks, their joys and sorrows at the family homestead, "Jalna."

De Leeuw, Adele. *Linda Marsh*. Macmillan, 1943.

Shy and unsure of herself, Linda feels sure that she will find no place for herself when her family comes to a new town to live. This is the story of how she finally wins a place with the gang.

Dickson, Marguerite. *Lightning Strikes Twice*. Nelson, 1947.

High-school days are times of decisions. Ellen wants to be a dancer. In this story of her junior year the reader will find inspiration and challenge.

Dickson, Marguerite. *Roof Over Our Heads*. Nelson, 1948.

A sixteen-year-old city girl eventually finds out how to live in a small town and be happy.

Dickson, Marguerite. *Turn In the Road*. Nelson, 1949.

This is the story of seventeen-year-old Isabel Worthington's ef-

forts to get her family to rise above the lowly circumstances to which bad luck and false pride have brought them.

Du Jardin, Rosamond. *Practically Seventeen*. Lippincott, 1949.

Toby, an attractive, fun-loving, teen-age girl, here reveals her inmost thoughts about her small-town family, herself, and her first boy friend.

Emery, Ann. *Senior Year*. Westminster, 1949.

A good picture of family relationships in meeting the problem of the daughter's going steady.

Emery Ann. *Going Steady*. Westminster, 1950.

A continuation of *Senior Year*, describing the turbulent summer that followed.

Fisher, D. C. *The Bent Twig*. Hold, 1915.

The "twig" is the daughter of a middle-west university professor, "bent" by the traditions and ideals of her parents.

Forbes, Kathryn. *Mama's Bank Account*. Harcourt, 1943.

A series of short stories about a Scandinavian-American family in which "mama" is the moving spirit. The tender, humorous tones of the book, and mama's selfless devotion to her family, are heart-warming, and serve to preserve the ideal of the close-knitted family constellation as the center of American life.

Franken, Rose. *Claudia*. Rinehart, 1939.

The story of a young married couple and their joy of pure living. Followed by *Claudia and David*, *Another Claudia*, and *Young Claudia*.

Friedman, Frieda. *Dot For Short*. Morrow, 1947.

Dot's family lived in an apartment under the Third Avenue "L" in New York City. Her father was a taxi driver.

Gerber, Will. *Gooseberry Jones*. Putnam, 1947.

Every boy needs a dog, but Gooseberry had a difficult time in persuading his mother that he did.

Gilbreth, F. B. *Cheaper By the Dozen*. Crowell, 1948.

Few modern families become as large as this one, or have such efficient parents; but, through the humor of this book there is much good sense to be absorbed.

Gooden, Peggy. *Clementine*. Sutton, 1946.

Humorous tale of a tomboy who finally becomes a lovely young lady who is looking forward to marriage. A good picture of a midwestern family.

Gray, E. J. *Fair Adventure*. Viking, 1940.

The setting is a university town in the south, the family is a professor's family with very moderate means. The heroine, Page, age 16, always seemed to have to play second fiddle to other members of her big family.

Hartwell, Nancy. *Shoestring Theater*. Holt, 1947.

The young people of a commu-

nity launch a little theater project in a barn. An understanding family in the background, and good community relations.

Headley, Elizabeth. *Date for Diane*. Macrae, 1946.

Diane is 14, and this is the story of her sophomore year in a small town high school.

Herbert, F. H. *Meet Corliss Archer*. Random House, 1944.

Corliss is the daughter of a well-to-do lawyer in a small town. This story depicts episodes in her subdeb life.

Hess, Fjeril. *Buckaroo*. Macmillan, 1931.

Ranch life in Nevada forms the background of a spirited and wholesome story for girls.

Lansing, Elizabeth. *Cathy Carlisle*. Crowell, 1948.

Cathy finally realizes that there is real warmth and security in the informality of their family pattern.

Lansing, Elizabeth. *Nancy Naylor, Visiting Nurse*. Crowell, 1947.

The Naylor family moves from a Chicago suburb to the little New England village of Mr. Naylor's youth. Adjustments are necessary for the whole family.

\*Lawrence, Josephine. *If I Had Four Apples*. Stokes, 1935.

A friendly newspaper woman tries to rescue a family from its overindulgence in the installment-buying system.

Lewiton, Mina. *Cup of Courage*. McKay, 1948.

\* Recommended for mature readers.

There is a straightforward and thought-provoking presentation of alcoholism in this story of Brook Falter's acceptance, at 17, that her father is a problem drinker."

Lewiton, Mina. *Divided Heart*. McKay, 1947.

When Julie's father goes away and the web of the family is broken, she learns that she must turn from the sweet fantasies of 15 to a world of mature relationships.

Lieferant, Henry. *Seven Daughters*. Coward, 1947.

Joe and Sabina had seven daughters, much to farmer Joe's regret, for he wanted a son. He made the girls wear "jeans" at all times, much against their wishes. Tragedy made Joe realize the error of his ways. Unhappy family life.

Lyon, Jessica. *For A Whole Lifetime*. Macrae, 1949.

This surprisingly good junior novel on modern marriage gives the young reader much valuable food for thought as well as an absorbing story.

McGraw, E. J. *Sawdust in His Shoes*. Coward, 1950.

A swift-paced story with all the excitement and glamor of the circus, and underneath it all the warmth and strength of a happy family group.

McIntire, Marguerite. *Free and Clear*. Farrar, 1939.

A story of life on a New England farm where, in spite of economic stress, Matt has been able to keep his title to the farm "free and clear,"

Medearis, Mary. *Big Doc's Girl*. Lippincott, 1942.

The story of an Arkansas doctor, his daughter, and his family.

Moore, Ruth. *Fire Balloon*. Morrow, 1948.

The life of the Sewell family in a Maine coast fishing town in the summer of 1947.

Nathan, Robert. *Winter in April*. Knopf, 1938.

A scholarly grandfather ponders over the ways of his fifteen-year-old granddaughter, who is alternately a puzzle and a delight. Written with charm and humor.

North, Sterling. *So Dear To My Heart*. Doubleday, 1947.

Life on a small Indiana farm some 40 years ago.

Ormonde, Czenzi. *Laughter From Downstairs*. Farrar, 1948.

The light-hearted adventures of a Bohemian family living in the Pacific northwest.

\*Ostenso, Martha. *Wild Geese*. Dodd, 1925.

A domineering father made home life miserable for the family.

Pinkerton, Kathrene. *Fox Island*. Harcourt, 1942.

In the loneliness of the Canadian fur country the Jackman family starts a fur farm. Continued in *Windigo*.

Rice, A. C. *Mrs. Wiggs of the Cabbage Patch*. Appleton, 1901.

A resourceful family preserves smiling faces under the most discouraging circumstances.

\* Recommended for mature readers.

Ross, M. I. *Morgan's Fourth Son*. Harper, 1940.

This is the story of a farmer who hoped that his younger son would follow in his footsteps and become a scientific farmer, and a lover of good livestock.

Sattley, H. R. *Young Barbarians*. Morrow, 1947.

Barbara and her friends, whose roughness and disrespect for other people's property causes strained relations with "misunderstanding" parents, discover that living is not all fun and irresponsibility. They learn the task of proper social behavior and helpfulness of parents.

Sawyer, Ruth. *Year of Jubilo*. Viking, 1940.

Lucinda and her family went to spend a year in their Maine summer cottage which is all they have left after the death of her father.

Schmidt, S. L. *New Land*. McBride, 1933.

An account of how the seventeen-year-old Morgan twins and their father make a fresh start in life on New Land in Wyoming.

Schmidt, S. L. *Shadow Over Winding Ranch*. Random House, 1940.

David tries to restore his family's mortgaged Colorado ranch. He experiments in wheat and karakul sheep. Good account of FFA.

Streeter, Edward. *Father of the Bride*. Simon, 1949.

A suburban wedding from a fond father's point of view. Fine family affection and understanding lie be-

hind the ludicrous happenings on this momentous occasion.

Sture-Vasa, Mary. *My Friend Flicka*. Lippincott, 1941.

Story of an eleven-year-old boy and his colt. Good pictures of family life. Followed by *Thunderhead*, and *Green Grass of Wyoming*.

\*Suckow, Ruth. *The Bonney Family*. Knopf, 1938.

A story covering 20 years in the lives of a family in a small Iowa town.

Tarkington, Booth. *Seventeen*. Harper, 1932.

Humorous story of Willie Baxter and his sister Jane who plagues him unmercifully. Good picture of family life.

Turlington, C. I. *Three To Make Ready*. Vanguard, 1948.

Their loving but long-suffering mother chronicles one year's crises with her three teen-age daughters.

Turnbull, A. S. *The Rolling Years*. Macmillan, 1936.

In the appealing story of three fine and charming Pennsylvania women, we see the years roll by from stern homely, pioneer days to the modern scene.

Van Stockum, Hilda. *Canadian Summer*. Viking, 1948.

A summer with harum scarum, lovable family of nine Mitchells.

Weber, L. M. *Beany Malone*. Crowell, 1948.

Sequel to *Meet the Malones*. Sixteen-year-old Beany guides the

\* Recommended for mature readers.

family destinies while her father is in Arizona recuperating from a serious illness. At least, she tries to.

Whitney, Phyllis. *Ever After*. Houghton, 1948.

The problems and misunderstandings of a very young married couple.

Whitney, Phyllis. *Linda's Homecoming*. McKay, 1950.

A story dealing with some of the difficulties of adjusting to a new household in a new locale. Linda is transplanted from New York City to a midwest town when her mother marries a man with a daughter Linda's age and a ten-year-old son.

Whitney, Phyllis. *Willow Hill*. McKay, 1947.

A high school girl is confronted with the problem of racial intolerance in the community in which she lives. She makes a sincere effort to understand her own feelings and attempts to influence others to be more democratic. Her problems are complicated by the fact that her parents do not see eye to eye with her on the problem.

Williams, Alice. *On Hampton Street*. Longmans, 1947.

The happy and satisfying life of the Edwards family who lived in a mining town.

Worth, Kathryn. *They Lived To Laugh*. Doubleday, 1942.

Older girls will especially like this story of a southern Quaker family in the early 1800's.



# Testing for the Fulfillment of Objectives in the Graphic Arts

LAURENCE GILPIN CUTLER

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In the fall of the year when the flowering season has reached its climax and nature has ripened the fruit and the grain preparatory for the lean months ahead, most schools, colleges, and universities are in the reversal of the natural seasons with brand new crops awaiting the planting, tilling, and harvesting. Student bodies are new and refreshed from a vacation period. Faculties and administrators are refreshed and awaiting the planting.

For many on the faculties of these schools, this will be a new experience; for others a time of new hope. During the summer and early fall months from the classrooms, conferences, workshops, and conventions that so fill our educational world, lists of objectives have been formulated, studied, discussed, emphasized, restated, re-evaluated, insisted upon. These objectives are in the seedbox for the planting; but what will the harvest be?

Lists of these goals of achievement do not constitute "another educational fad" which will soon be forgotten and by-passed for the next "newest." For the most part the classroom teacher considers his objectives seriously and shapes his teaching accordingly. It is not the purpose of this article to enter upon

a discussion of objectives as such, but to place them against the common educational measuring stick of testing to see if they are actually being accomplished in teaching procedures, and still further to see *how they are being measured* in the industrial-arts and more specifically in the graphic-arts area.

## LIMITATIONS

The teaching of graphic arts is often limited to larger school systems because it is thought to be an expensive subject to place in the curriculum. Frequently it is criticized on the basis that too much emphasis is placed on the acquisition of skills rather than the fulfillment or accomplishment of those objectives considered desirable. Either or both of these statements could be true under certain postulated conditions. But by the same reasoning would English, mathematics, literature, science, or other subjects be stricken from the curriculum if they failed to accomplish a list of objectives or did not contribute materially to the cardinal principles?

Even under some of the worst conditions and situations imposed upon teachers in the graphic arts and frowned upon as being unsound and undesirable educational practices, the shop experiences en-

countered under these conditions *can* and *do* contribute directly to the cardinal principles and the major objectives set up for industrial-arts teaching.

Practically every project or exercise undertaken in the graphic arts is within itself an objective test of a set of skills and a limited amount of related information. These projects can be rated in the same manner as an English paper, a mathematics lesson, or a chemistry experiment. Further, these same skills and this related information may be tested with ease and facility through objective tests, or as sometimes thought of in the shop subjects as "paper tests."

#### A PLACE FOR LEARNING

Interest in a beautiful and serviceable product sometimes makes the shop appear as a place for making things rather than a place for learning. However, in a program which has been planned and one which proceeds with proper guidance, things may be made which are beautiful, useful, and serviceable, and at the same time desirable traits and habits can be developed. The manipulative processes, the handling of tools, machines, and materials provide avenues for turning the shop experiences into broad educational experiences for the development of the objectives.

One teacher, one subject, or one class cannot always provide a full set of experiences which will round out all the goals considered desirable. One area of work if pursued

through its ramifications will make a very definite contribution to the whole educational experience. The correlation with other subject-matter fields brings into reality many of the things which for a long time have been abstractions. Here very often the student for the first time realizes that the fundamental processes have a practical application.

That the shop experiences coupled with the related information form a cutaway model of the educational processes may best be seen by examining some specific objectives and specific testing procedures. The objectives to be considered are those taken from *Standards of Attainment in Industrial-Arts Teaching*.<sup>1</sup>

#### INTEREST IN INDUSTRY

The first objective of this list of twelve is, "To develop in each pupil an active interest in industrial life and in methods of production and distribution." Under this heading the teaching follows the lines of how things are made, sources of raw materials, methods of distribution, qualities and uses, sizes and grades, and working conditions within the area. In the graphic arts the teaching possibilities for the accomplishment of this objective are almost unlimited and likewise the testing since every student is a consumer of printing, both directly and indirectly. One of the major factors to be taught is the difference between the three major

1. *Standards of Attainment in Industrial-Arts Teaching*, American Vocational Association, Washington, D. C., 1937.

printing processes—letterpress, planographic, and intaglio.

The newspaper is an item of thorough familiarity to the students and obviously its methods of production are studied, discussed, witnessed, and in many instances participation in the production is experienced. Hence it follows in the testing procedure a multiple-choice item is set out.<sup>2</sup>

Most modern newspapers are produced by (a) intaglio; (b) letterpress; (c) planographic printing.

Further testing and teaching of this objective is realized through information relative to the manufacture and distribution of paper, its qualities, sources of materials, and packaging.

A printer's ream of paper contains *five hundred sheets*.

Bond paper is used for printing letterheads because it is a tough sheet and has a good writing surface.

#### CONSUMER VALUES

The second objective is, "to develop in each pupil the ability to select, care for, and use properly the things he buys or uses."

Thinking of the graphic arts as an industrial-arts subject rather than vocational, this item must be approached from the viewpoint of the consumer of printing in place of the producer of printing. Vocationally the qualities of the tools,

machinery, and materials for production would have to be considered. Therefore the consumer point of view limits the teaching and testing on this particular point to the *product* of the graphic arts. In this sense it is the indirect consumption of the press as in a book, magazine, or newspaper, and a direct consumption as the purchase of a specific job of printing or use of advertising space.

#### PRINTING COSTS

In the field of advertising a comparative rate has been established based on the cost of circulating an agate line of type through one million circulation. A comprehension of the formula to find the milline rate is the key for the comparison of the cost of any advertising regardless of the amount of space used or the number of copies circulated.

The comprehension of printing methods makes it obvious that the greatest cost in most printing procedures is in the preparation of the material for printing; *i.e.*, the setting of the type, procuring the illustrations, and press preparations. With the cost of these operations pro-rated over the number of copies produced, then the unit cost is materially lowered by increasing the quantity. Likewise the choice of a printing method frequently depends upon the kind of material to be reproduced and the purpose for which it is intended. With these facts before the student then these test items could be used:

2. In all the following samples of test items in multiple choice and completion the correct choice and the blank are indicated by the italicized words.



Comparative advertising rates are best expressed by (a) agate line basis; (b) *milline rate*; (c) the column-inch rate.

The stationery for the operation of your business would be most economically purchased when ordered in (a) 500 lots; (b) 5,000 lots; (c) 2,500 with instructions to hold the form for reprinting.

To produce a halftone illustration on a catalogue cover of an imitation leather finish, the best would be obtained from a *planographic* printing process.

### APPRECIATION

For objective number three we find, "To develop in each pupil the appreciation of good workmanship and design." Every piece of printed material is a problem in design so the daily work of the pupil easily centers itself around the study of design. One of the very earliest projects emphasizes to the students that lines of type are to be set flush to the left and right so that every line is of identical length to present a mass with a more pleasing contour than that afforded by a ragged edge. Strength of the various structural or design forms such as the inverted pyramid, the block, centered elements, staggered items, and varied indentions are considered as attention-compelling and eye-guiding factors. The testing program follows with items to identify these forms and their uses:

*Hanging indention* sets the first line of type flush with successive lines indented on the left.

Considering the contour in a lino-type composition test, the completion question reads:

In setting poetry, lines which rhyme with each other are indented the *same*.

Considering proportion we find a *true T. F.* item:

The ideal length of a line of type is considered to be approximately an alphabet and a half.

The fourth objective is, "To develop in each pupil an attitude of pride or interest in his ability to do useful things." Undoubtedly when the pupil is made to realize that numerous typographical errors constitute slovenly workmanship, he becomes error-conscious and strives to improve his own typesetting and that of others by proofreading. Syllabication of words provides one means for testing. In the following items, the proper syllabication is given on the left, but in the test these would be mixed.

knowl-edge or know-ledge  
ex-pe-ri-ence or ex-per-i-ence  
ev-o-lu-tion or ev-o-lut-ion  
di-vulged or di-vulg-ed

### SELF-RELIANCE

Skill comes in for a share of the fifth objective which is, "To develop a feeling of self-reliance and confidence in the pupil's ability to deal with people and to care for himself in unusual or unfamiliar situations." It would include familiarity with machines, common tools, materials; learning to plan

and execute problems on one's own initiative and responsibility, and the preliminary examination before attacking a problem. Thus a *false* T. F. statement says:

The numbers and symbols found on the side of a linotype matrix indicate the size of type and the number of such characters in 1,000 ems of composition.

A multiple choice item in presswork states:

A typographic numbering machine will not operate properly when (a) the machine is parallel with the cylinder; (b) when the plunger is away from the cylinder; (c) *when the plunger is next to the cylinder.*

#### ORDERLY PROCEDURE

The sixth objective is, "To develop the habit of an orderly method of procedure in the performance of any task." The accomplishment of this objective requires an analysis of the task to be performed and the planning of a step-by-step procedure to eliminate wasted effort and the duplication of motion. Rearrangement of the steps necessary to complete any operation makes an excellent check on this particular point. The following are nine steps in making a stereotype plate in a flat casting box. These were mixed up in the test:

1. Place backing felt on matrix.
2. Place tail on matrix.
3. Pre-heat matrix and box.
4. Check metal temperature.
5. Place matrix in box and position bars.
6. Close box and tighten clamp.

7. Pour metal in box.
8. Wait for metal to solidify.
9. Remove cast and check printing qualities.

Too frequently impetuous youth like to slide by those things which constitute the unpleasant tasks and to go in search of other pursuits more to their liking. The seventh objective is, "To develop the habit of self-discipline which requires one to do a thing when it should be done, whether it is a pleasant task or not." This ties in so very closely with our democratic way of life, our place in society, and our cultural heritages that no teacher for a single moment can afford to lose sight of its importance. Objective or "paper testing" obviously finds it difficult to reach this point directly, but it can take the indirect approach which will keep fresh in the pupil's mind the rewards for doing unpleasant tasks when they should be done, and further, that the completion of "want-to-do" things is frequently preceded with "don't-like-to-do tasks"

#### UNPLEASANT TASKS

Many of these unpleasantries exist in the printing office such as the distribution of type, washing presses, keeping tools and materials clean and in order. A presswork test item uses the following approach:

A film of ink dried on the press rollers causes them to lose *tack* and results in poor ink distribution.

In hand composition the importance of attention to details in putting type back into the case to pre-

vent different type faces from becoming mixed is checked in this manner:

In distributing type, the compositor should check *the size, the nick, and the face* of the type characters to be sure he has the proper case.

### GOOD WORK HABITS

The eighth objective, which is universally sought in educational procedures but which is difficult to measure without a performance test, is, "To develop in each pupil the habit of thoughtful work without loitering or wasting time." Often this habit is measured subjectively on the basis of objective performance. The true measure would be the objective performance but the stimuli prompting the performance may be of a punitive nature so that the results will not necessarily evaluate the habit in its natural or pure state. Many lessons and projects are completed not because the pupil has the desire to do the thing for the sheer joy of doing it, but because he knows that low scores, scorn of the group, or a reprimand will follow if the task isn't completed.

At the other extreme we find many instances of pupils who literally must be ejected from the shop or laboratory because of their intense interest in the work. The testing procedure takes an indirect approach which hits between these two by checking on habits which indicate thoughtful work and habits which accomplish a task without

wasting time. A completion item illustrates this point:

The correct position for type in the galley is with the head of the type to the head of the galley and to the *left-hand* side.

A linotype operation test makes this approach:

When the hands are in the basic position the first finger of the right hand should rest on the *r* key, and the second finger of the right hand should rest on the *m* key.

Point nine becomes easier to measure since it deals largely with co-operation. The ninth objective is, "To develop in each pupil the attitude of readiness to assist others when they need help and to join in group undertakings."

In the letterpress printing process the height of type and plates is based on .918 inch. When the student comprehends the printing process and realizes the importance of checking materials to accomplish a good job of printing with the least effort and expense, he is participating directly in a co-operative undertaking. The testing may take any of the standard methods of questioning to check this height of type—a true-false statement, multiple choice, or a completion item.

### THOUGHT FOR OTHERS

Turning from group work where co-operation is stressed, the tenth objective is, "To develop in each pupil the thoughtful attitude in the matter of making things easy and pleasant for others." In the print

shop this would include such items as putting away tools and materials after use, keeping tools and equipment in good working order, and realizing that in most instances the tools, equipment, and materials are for common use of the group. With a large number of students using common tools or a piece of equipment, they very soon learn in their work that they must treat others as they would be treated. In a type case where letters have been placed in wrong compartments, the work of the next individual to use the case is seriously impaired. To forestall and minimize this possibility each student is given a case of type for his own use during the term. He *knows* that if letters are in the wrong compartments, *he* has placed them there. Consequently there is a carry-over to the point where common use is made of other type cases and pieces of equipment. Here again the performance test under actual shop conditions provides the best criterion for an objective rating. Indirectly it may be evaluated with items which indicate a knowledge of the points being stressed, as a *true* T. F. statement concerning the arrangement of the compartments in the type case:

The *y* is to the left of the letter *p*, and the *w* is the second box to the right of *y* on the lowercase side of the California job case.

This may also be checked in discerning the differences among letters which are confusing to the be-

ginner in another *true* T. F. statement:

The balls on such letters as *b*, *d*, *p*, and *q* are on the same side of the stem in type as when printed, but in type the stem ascends or descends the opposite direction as when printed.

In the graphic-arts area the techniques for accomplishing the next objective differ slightly from those of the general industrial-arts subjects in the types of work undertaken and in the channels in which the skills are diverted.

The eleventh objective is, "To develop in each pupil a knowledge and understanding of mechanical drawing, the interpretation of conventions used in drawings and working diagrams, and the ability to express his ideas by means of a drawing." Graphic arts fully subscribes to the inclusion in the curriculum of courses in drafting and design for the accomplishment of this objective, but goes further in its emphasis of the design elements. One cannot work with tools and machines without a comprehension of drafting principles. A linotype mechanism test suggests the necessity of a comprehension of drafting and its contribution to mechanical principles with such items as:

From the wall chart indicate whether the stick is returned to normal position by (a) *spring*; (b) *cam*; (c) *lever action*.

According to the Mergenthaler chart the pot lever stop should have 1/32 in. clearance.

## TOOL SKILLS

The twelfth and last objective included in the list is, "To develop in each pupil elementary skills in the use of the more common tools and machines, and a knowledge of the methods of procedures in tasks frequently encountered by the average man, together with a knowledge of the working qualities and the characteristics of some of our most used materials."

While printing gives civilization a product that is consumed by all age levels, scarcely a day will pass by in the average printing office that some consumer displays or confesses his ignorance of the operations involved in the production of the piece of printing he is attempting to buy. The standing joke of the customer who blandly asks for a dozen or so copies of the printing order right away, and that there is no hurry for the remainder is patetically true.

This error and disappointment will not confront the boy who has had the most meagre experience in setting the type, proofreading and correcting, and locking the job for the press. The thrill that he experienced in seeing his name and that of his friends as the sheets of paper are printed on the press will long remain with him as well as a comprehension of the amount of time consumed in the preparation before that *first* impression could be made.

Any test question encompassed in the graphic-arts area directly covers this last important objective.

They may be questions concerning type, ink, paper, the presses, folding machines, bindery operations, illustrations, or comparisons of the three major printing processes. The currency of the realm, the comic book, the newspaper, the laws, the recording of man's culture, past and present—all these are products of the "art preservative of arts." As products of our culture, they constitute an important portion of our heritage.

Type, paper, printing press, and ink are the names of tools and materials common to everyone's vocabulary, but the processing of these materials with the common tools and machines into the completed printed page is quite frequently aside from the average experience.

Schools maintaining shops and laboratories for the graphic-arts experiences are contributing much to turn out useful, happy, and successful citizens. It is not the thesis of this article that every school print shop poses itself as *prima facie* evidence of accomplishing the objectives of industrial arts and the seven cardinal principles any more than any other class or area of work in the other curricular subjects. It seems obvious, however, that the graphic arts *can* and *do* contribute to the attainment of a comprehensive list of objectives; and further, that the accomplishment of these objectives is being measured by *teacher-constructed* objective tests.



# What Objectives Mean to an Art Teacher

EUGENE DAVID LARKIN

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As every educator knows, a teacher achieves in terms of the objectives he sets for himself and for his students. It is well occasionally to re-examine one's old objectives, to modify them perhaps, or perhaps to replace them. It is through such honest self-criticism that education progresses.

This being so, it is perhaps well to ask: What are we attempting to achieve through the teaching of art today? Have the objectives of art teaching changed? How are the objectives of art teaching achieved in practice? I will try briefly to give my own tentative answers to these questions.

Today, with our emphasis on general education, we are attempting through the teaching of art to introduce all students regardless of age level to creative experience. Our primary business is to produce teachers who will be able to teach art successfully to the whole population, as the whole population is now being taught to read and write in the public schools. We are in the business of mass education. The objective of producing teachers for this task outweighs all other objectives.

Although art education has been going on for quite a while, early opposition to it caused it to have somewhat more limited objectives

in the beginning than it now has. The opposition stemmed from two main misconceptions regarding the need for art. The first mistaken idea was that art appreciation and participation are not practical skills, and art education is therefore an unnecessary expense to the taxpayer. We have learned through experience with hideous public and private buildings, uncomfortable and ugly interiors, and inferior popular pictures and decorations that this is not the case. Most people believe now that it is a good idea to know a little bit about architecture, painting, furniture, and useful object design if nothing else. The second mistaken idea was that art can only be the property of the few, that only specially talented people can participate in art or even enjoy it. This idea was bound up with the conception of art as a thing to be put on a pedestal in a gallery. The idea of art as the product of a unique genius was fostered by those established in the business of art and profiting from the sale of the unique and the imported. Though great works of art may be products of genius, it does not demand genius to create. Today these two misconceptions of art, as something impractical and as the work and concern of rare genius only, are disappearing rapidly. And it is with the disappearance of these miscon-



ceptions that the objectives of art education have been broadened.

With the broadening of these objectives we are approaching and beginning to experience a new renaissance in art. Quality like everything else exists where there is a demand for it, and it is through mass education that a market for quality in creative activity will be established. To anybody who believes in progress and democracy the idea of a new renaissance in art should not seem strange. Where society finds it possible to extend to all the opportunity to develop in any area, that area will become more important in the daily lives of the people.

To affect the daily lives of the people, art must be presented to them by teachers who are skilled in the field of creative activity. It is only through teachers who have been specially prepared in this field that the mass education objective of art teaching may be achieved in practice. The special preparation for art teachers must deal with individual creative activity and stress the importance of the innate creative potentialities of everybody.

Achieving the objectives of art teaching in practice means too that copy work of any kind must be done away with. By definition creative activity must be original. The old argument that creativity is only for the few has been disproved. The old idea that creativity is harder than copying has also I think been disproved. It is only when false

and formalized ideas of what constitutes an absolute system of art are held as ideals for the student that "creativity" becomes harder than copying.

Humanity has now arrived at the age where maturity is possible. We are old enough now to realize that no one system is necessarily correct to the exclusion of all others. Then, too, the teacher of art must realize that the experiences his students have in art must be happy experiences. The experiences must open up new views of the world and its materials. The teacher should lead the student in such a way as to permit him to see with his own eyes and feel with his own hands the wonder of life.

It is for this reason that it is so important that the art experience the student receives should be the experience of participation. It is through participation and first-hand experimenting unfettered by rules or copy books that the student receives experience and faith in the thing that he learns. It is through experience with the materials of art that he discovers the happiness of finding a new technique of communication and self-expression. And it is on this firm rock of experience and participation that the foundations of good art teaching are laid. It is upon these foundations that the structure of a more beautiful and more comfortable society will be erected.

# Why Kansas State Teachers College Students Chose Industrial-Arts Teaching

RALPH KENNETH NAIR

It seems that most industrial-arts students now in college were influenced by the subject matter field and its appeal to them, as well as by teachers and guidance workers. The question might then be asked, "Are there other factors which made these students wish to become teachers of industrial arts?" Among other things this study attempted to determine when the occupational choice was made, what event or individual was most influential, and if the teaching candidate is happy in his selection.

During the 1950 summer session at Kansas State Teachers College, a questionnaire was submitted to a random sampling of 108 students in the department of industrial education, approximately two-thirds of whom were in the graduate school, the remainder being undergraduates. Only those students who were majoring in industrial arts were considered, and those who were preparing to teach trade and industrial vocational education were excluded.

Of the men included in the study, 78 per cent were married, and 87 per cent were veterans. A slight majority of 53 per cent had attended high school in small towns. In considering fathers' occupation, the skilled trades at 19 per cent were most predominant, followed

by agriculture at 18 per cent, professional at 15 per cent, and business at 13 per cent. Other occupations were eight per cent of the total or less.

In listing the most desirable features of industrial-arts teaching, 94 per cent of this group considered mechanical activities involved as most important. Closely allied at 88 per cent was the wish to work with young people. Others as stated by the group are as follows:

<i>Desirable features reported</i>	<i>Per cent</i>
Deals with mechanical activities . . .	94
Want to work with young people . . .	88
Like the working conditions . . . . .	87
Offers a sense of security . . . . .	80
Desire to be of service to society . . .	78
Pays a comparatively desirable salary . . . . .	69
Offers advancement to a higher educational position . . . . .	48
Offers prestige in the community . . .	46
Shorter hours of work are desirable, .	26

Most encouraging was the fact that desire to work with young people and to be of service to society took precedence over interest in community prestige, salary, or shorter hours of work. Since no provision was made for identity of the students answering the questionnaire, it was hoped to preclude insincere answers.

Since a material portion of the group consisted of veterans who were attending college under vet-

erans' benefits, it raised the question as to the effect of military life and its educational benefits upon the choice of industrial-arts teaching as a career. Only one-third admitted that G. I. educational opportunities affected their choice of this area. The counseling program of the veterans' administration has been the first co-ordinated guidance effort on a national scale, and this study could not, of course, offer a true picture of the effectiveness of this national service. It is interesting to note, however, that only 28 per cent signified that the veterans' administration gave assistance or suggested possible success in the industrial-arts teaching field. It should be pointed out that in most cases the counseling service was mandatory only for those under Public Law sixteen.

The matter of expediency is usually one which must be considered in occupational choice. The students in this study gave these answers:

<i>Reasons given for choice</i>	<i>Per cent</i>
Offers steppingstone to another occupation .....	45
Offers opportunity to be near family and friends .....	37
The college was near and I had to do something .....	4
I failed in pre-engineering and this was the next best .....	1
Easiest profession to enter with little training .....	1

Since 45 per cent considered industrial-arts teaching a steppingstone to another occupation, this should materially confirm the belief of those who advocate the values of industrial arts as general education

as well as preparation for higher ranking positions in the education field. When one considers that many vocational pursuits require travel and absence from home, the decision of 37 per cent to enter this field because of proximity to family and friends might be a legitimate choice factor. Only four per cent of this group entered the field because of the location of the college. Encouraging is the fact that less than one per cent thought of industrial-arts teaching as the easiest field to enter with little training or because of failure in pre-engineering.

When asked to indicate what experience aroused most interest in teaching, 78 per cent of the men studied industrial arts in the public schools and liked it. Hobbies were responsible for the interest of 37 per cent, and 18 per cent attribute their choices to activities in Boy Scout work. The following is a summary of the experiences listed:

<i>Origin of interest</i>	<i>Per cent</i>
A class in school .....	34
A hobby at home .....	30
A talk or lecture .....	19
A book or magazine article .....	8
A trip or excursion .....	5
A club or organization .....	3
A contest .....	1

It is possible that the 34 per cent who believed a class in school to be the most influential experience might refer to an industrial-arts class, since 78 per cent said they took industrial arts in school and liked it. Hobbies at home, some encouraged by industrial-arts teachers, appear to have been an important factor as well.

First actual contact with manipulative work occurred in the following ways:

<i>Initial contacts</i>	<i>Per Cent</i>
Junior or senior high school industrial-arts class . . . . .	34
Home workshop activities . . . . .	27
Part or full time work experience . . . . .	19
Hobbies (individual or group clubs) . . . . .	15
Elementary school handwork activities . . . . .	8
Boy Scout activities . . . . .	5

It may be seen that the schools and their industrial-arts offerings constituted the predominant initial experience in manipulative activities of these students. It follows that industrial-arts teachers should co-operate with fathers to foster home facilities for workshops, or at least some type of hobby.

In investigating home influences, it was found that only nine per cent of the parents of these young men had wanted them to become teachers. Only five per cent felt their parents had influenced them unduly in occupational choice. Most influential individuals in these students' choice they listed as:

<i>Chief influence in choice</i>	<i>Per cent</i>
Teacher . . . . .	41
Friend . . . . .	14
Counselor . . . . .	10
Father . . . . .	7
Relative . . . . .	4
Mother . . . . .	3
Siblings . . . . .	0
Other . . . . .	5

Combining the percentages of counselor and teacher shows a total of 51 per cent, thus rating the school and teacher an important factor in occupational choice. Combining

the percentage totals for father, mother, siblings, and relatives gives the comparatively small total of 14 per cent. Further, 78 per cent believed that more occupational information of an unbiased nature would have been helpful, and 50 per cent said their teachers should have been of more assistance in problems of this nature. Slightly over one-third of these men were influenced by a shop teacher who had been an "ideal," while one-fourth had teachers who suggested they should become teachers of industrial arts. Separate check questions revealed that 23 per cent attributed their choices to the influence of some one individual, and ten per cent admitted a school counselor was influential, confirming earlier findings.

Further school influences were determined when the investigation revealed the grade level at which the first industrial-arts classes were taken. This gives further support to the importance of the exploratory curriculum of the junior high school in regard to the industrial arts:

<i>First industrial arts</i>	<i>Per cent</i>
Elementary school . . . . .	16
Junior high school . . . . .	44
Senior high school . . . . .	20
Junior college . . . . .	8
College . . . . .	12

Although some relationship seems to exist between the choice of industrial-arts teaching and experiences in industrial-arts classes, actual decision to enter the field was delayed until after high-school graduation or college. This is substantiated by these answers:

<i>Period of decision</i>	<i>Per cent</i>
Elementary school . . . . .	1
Junior high school . . . . .	4
Senior high school . . . . .	14
After high school . . . . .	35
College . . . . .	46

Several reasons might be advanced for the delay in decision, and these might be applicable to other fields. Although some tentative decisions are made at younger ages, they are often not too stable, and the young person needs a certain amount of maturity to recognize the importance of his choice, as well as the possibility of his success. Meager counseling facilities in the past have failed to stress occupational choice in many cases until "career day" during the latter part of high school, usually the senior year. Too many young people are thus faced with the impact of a necessary occupational choice after high-school graduation, and the decision whether to attend college or go to work. Another possible reason for the delay in this group may have been the preponderance of veterans whose education and vocational plans were interrupted. Upon their return from the service, the veterans were often self-conscious in the high-school setting because of age, and completed their pre-college work through the armed forces schools, junior colleges, or college extension work.

A study of the satisfaction of

these students with their present choice of industrial-arts teaching as a career was encouraging. Of those expressing opinions, 92 per cent believed they were suited for teaching the industrial arts, while 90 per cent were happy in their present choice; 72 per cent were interested in teaching as a life career, while 35 per cent admitted their choice of teaching was largely due to chance. Only 16 per cent would make another choice if it were feasible.

Certain implications might be drawn from the results obtained in the study. First, parents should note that they apparently do not have as much influence in this occupational choice as does the school. As a result, they may be more concerned with the type of teachers the school is able to secure.

Second, industrial-arts teachers already in the field should be pleased with the influence they apparently have in the matter of choice of profession and should be in a favorable position to attract desirable teacher candidates who have interest and aptitude.

Third, administrators who are interested in developing a functional guidance program should give more important roles to their teachers of industrial arts who may assist with guidance services in the school. The informal atmosphere of the school shop seems to lay the groundwork for the first step in effective counseling.



# Current Techniques in Advertising and Illustrative Photography

LEROY BREWINGTON

In this age we find many kinds and types of art. There is art for beauty and for memory, art for the sake of art itself, and art for the sake of an advertised product. There is a story behind the creation of each, but we are going to discuss illustrative photography in its relation to commercial advertising.

Behind each of the illustrated advertisements that catch or fail to catch the eye, there are numerous persons working together—the agencies, the models, constructors, but the team without which the advertisements would be impossible is composed of the art director and the illustrator.

The director takes the initial steps in which he has an idea or a slogan that he must put across to a large audience in a manner that is quick but positive. The product advertised must draw attention in such a manner as to induce immediate action. To accomplish this result, the director must know the ones to whom he appeals. He must realize what people will be most interested in the particular product, and he must follow through with a knowledge of what will capture this particular audience.

Naturally, there is much competition between the paint and brush artists and the camera artists. The director must distinguish the merits

of each and decide which type of artistry will better fill the needs of the agency he is representing, then appoint the person to fill the job requirements. Usually a director works with a specific illustrator because he knows that person's capabilities and gradually comes to rely upon him. In this manner, an inseparable team is formed.

## TELLING THE STORY

The photographic illustrator has many responsibilities after the groundwork of the director has been done. He has to tell the director's story with a picture. To do this, it is necessary to grasp the story himself, then create the situation to carry out the story. Since pictures without words are the rarest photographs, he must work around the idea or slogan furnished by the director. This brings out the background element. An agent has not the time to thumb through dozens of prints, selecting the best for each advertisement. The photographer must learn to make one picture, and that one so good that it can be used with only minor changes such as retouching and cropping.

Of major importance is the regard for spacing. The agency usually has an allotted space paid for in various magazines, newspapers,



and other media. He may have already decided the positions for the words and the picture, or he may leave the decision to the director. In either case, the photographer may upset the whole ad by not completely filling, or by overfilling, the allocated measurements. The assignment becomes even more difficult if no specifications are made concerning space. He then has to turn out a finished picture, into or around which words may be inserted at any spot.

### TRAINING ESSENTIAL

To fill all the requirements of a successful photographic illustrator, formal training is, perhaps, the best groundwork. Long hours in dark-room work, carrying equipment, mixing chemicals, all give experiences with which to work in the future. Some idea of what to expect in a negative and a finished print is gained. And a knowledge of the camera, a familiarity with its operations, contributes considerable progress toward successful illustrations.

As for the actual work of bringing illustrative photographs into being, there are, as in every field, certain steps to be observed if methodical success is to be the result. These steps are: visuals, or rough sketches; planning, designing, and building sets; make-up; lighting; composition; and the direction of models and personalities. All these are bound together, yet each must be observed both separately and as a unit to achieve a good illustration.

Let us assume that an art director has been given the headline to be used for a new ad. He thinks it over, hits upon an idea, and roughly sketches it. This rough drawing, called a visual, is the main source for the illustrator's work. It usually consists of outline drawings of background, models, and lettering. This general view is followed by the photographer as closely as possible. Still, there is much to be desired. The sketch is rounded out, filled in, made into an attractive advertisement by the use of common sense, inventiveness, and a knowing head behind the camera.

The art director, supposedly, does not know how the final picture comes to be that way. He has no thought or care of the equipment used, just so the agency will be pleased.

### TECHNICAL DETAILS

Though it is most common, all art directors do not provide visuals. In case a visual is not furnished, the photographer works with what he has, the headline, to make a picture that words can be fit around.

Some information is essential and must be supplied directly by the client, namely, the screen reproduction to be used, the type of model, the feeling and the story to be put across, and naturally, a deadline. Perhaps most essential is a knowledge of where the picture will be reproduced. This is important so that the correct lighting may be used to achieve a contrast without masses of black. Except for high-style ads which appear on a definite

quality of paper and screen, the picture should be made to be reproduced on either a rough or a fine screen.

Of course, any client expects his copy and visuals to be held in strict confidence, and the photographer is held responsible if any of the material is seen by others, or if his latest idea becomes known to others before its formal release.

### THE BACKGROUND

Building and planning the set are important procedures in the making of an ad. Photographers have no intention of misleading the public, and so try to plan sets that are actual experiences or in perfectly natural backgrounds. Actual location shooting is preferred to the tedious task of setting up an artificial set; but when weather and distance interfere with deadlines which are months away from the time the picture is made, there is little choice but to use those artificial means of conveying atmosphere.

To build a set successfully an illustrator must have immediate access to information concerning patterns, customs, furnishings, styles of living, everything relative to any subject. The public library is decidedly an asset to the American illustrator.

The necessities that should be on hand at all times in any studio are: a complete carpenter shop, odd pieces of lumber (to be used in emergencies), sand for beach effects, ground granite (for snow), earth, grass mats, artificial flowers,

false brick, log and picket fences, trellis, linoleum, dark and light rugs and drapes, and a large movable mirror. Other odds and ends can be kept after they have once been used to add to the collection of props.

There are two chief problems in the building of the set. The first is the camera angle. No set should be constructed until the photographer has approved the plans, thinking in terms of the finished photograph. The second is the actual construction. Here the use of specialists reduces the risk of accidents, furnishes expert work for future use, and greatly lessens the worry of the man behind the camera.

### CHOOSING THE MODEL

Now it's time to choose the model. This casting is a ticklish business, at best. A photographer has no time to interview hundreds of people for each photograph. So he keeps in mind good posture, always a requisite for any model, the type of face, the type of figure, the type of character, nationality, if it enters into the picture, and above all, what he wants the finished picture to represent. If there is just a minor flaw in any person, it can probably be remedied in a simple way, and the photographer feels free to make suggestions for improvement rather than have the future of the model set aside. The highest requirement for any model is the possession of genuine acting ability or a strong feeling for acting. Otherwise, the mood will not be properly illustrated.

Proper make-up becomes essential when the lights can be handled to create almost any desired effect. The best way to assure good make-up is to apply it right on the set, using some of the tricks to give good lines that are required in the movies when all angles will be seen. The natural photograph is the one that appeals, so a model's lips and face make-up are usually the same as she uses in her daily life. Pan-cake make-up is considered to be better than face powder because it will readily absorb the light. As for hair, the style doesn't always count—but beauty is the thing. The most suitable hair-do for any person can be judged by drawing a V from the chin to the eyeline. This V-shape is important to beauty, and any hair styling that will accent it is becoming.

### LIGHTING

There are three types of lighting: Electric, Sun, and flash. Outdoor lighting is just as important as studio lighting. One thing to remember is that each photographer has his own technique and uses this developed personality when lighting and directing the subjects.

Careful use of lights makes pictures. John O'Riely has one rule to be observed in his studio—no lights are ever to be attached to a wall or ceiling, and no lights are to be preset before shooting or left on the set after shooting. The principle to follow is not to see how many lights can be used, but to see how few, properly placed, will satisfactorily illuminate the subject. The high wattage units used are often mis-

understood by the general public. Lights of this sort are used to save time by cutting the exposure. By using longer exposures and less wattage, the effects would remain the same. To have good lighting, then, follow these simple steps. First, talk to the model, study the face, keep in mind the appeal of the ad. Second, light the set for the mood of the picture. Third, light the subject to catch the desired expression.

For outdoor lighting, which is more natural and produces better effects, reflectors can be used to such an extent as to completely control the light. These reflectors take care of shadows, foreground illumination, and background lighting. The only thing to decide about outdoor photography is whether something in the landscape belongs in the foreground, background, or should be cut out completely.

### HANDLING PEOPLE

In directing personalities, the procedure varies little from that of models. A quick assurance on the part of the photographer, self-confidence, a smooth but quick exposure, are all that is necessary. A self test in the handling of equipment will quickly assure the photographer whether or not he is capable of handling personalities and time limits. If he is not, then practice is the only answer to win the confidence of personalities who are accustomed to being photographed at all times and in all situations.

Composition is so broad a subject that only those who know every angle can be critics on the matter.

Generally speaking, pictures are made up of lines, and if those lines are pleasing in arrangement, in their make-up and in their appearance to the eye, the composition may be said to be good. That is all that can be said of the subject.

Beginners in photography, and especially in the branch of illustrative photography, hear what an easy thing it is to do, the easy

money coming from this work, the simplicity of making pictures. Actually, picture making is work—hard work. Anybody entering into it for just the fun, the money, and the right to say, "I'm a camera fiend," might just as well join a camera club and save his energies for something else that he can put his heart and soul into—for that is what good photography takes.

## Comments on Books

### *Leather Tooling and Carving*

By CHRIS HAROLD GRONEMAN

Published by International Textbook Co., Scranton, Pa., 1950. Price, \$2.75.

Leather tooling has long been a favorite craft with amateurs as well as professionals. In recent years tourists returning from vacations spent South of the Border have brought for their own use and for their friends, Mexican carved purses, billfolds, belts, and the like, with the result that many craftsmen are including the carving of cowhide in the accepted Mexican manner along with leather tooling.

In *Leather Tooling and Carving* the author meets a real need for instruction in this newer interest of an old craft. The book is divided into four parts.

Part I gives information about leathers suitable for tooling and carving. It also lists the tools and supplies required by the beginner at home or at school as well as for the professional in the shop. Attention is given to the importance of the business of selecting and preparing proper types of leather for the articles to be made and stresses the importance of forming correct working habits and procedures.

Part II presents in a clear, concise manner the sequence of the steps to be followed in making articles for daily use. In addition to

the step-by-step instructions are many photographs, drawings, and sketches to aid the beginner to a better understanding of the proper techniques and methods to be followed.

Part III is devoted to explanations and descriptive drawings of many useful articles. The author shows how the student may create his own variations of the suggested articles. This is very important—as he points out—and should not be overlooked by the worker, for it is only in developing his creative ability that a successful worker grows. The author offers one idea of a project; there are many expressions of the same project. It is a temptation to the beginner to copy suggestions such as are given in this chapter; but if the craftsman is to advance in his work, he must develop his ability to work out his own patterns and designs.

Part IV gives a list of reference books on the subject of leathercraft that will enable the craftsman to broaden his range of ideas.

The author presents his subject in a well-organized, easy-to-follow manner. He stresses the functional and practical side of leathercraft in a way that makes his book a valuable, handy guide to anyone, amateur or professional, who wishes to pursue this craft. — BERTHA A. SPENCER.

PORTER  
LIBRARY



### *Leaders in Industrial Education*

By WILLIAM THOMAS BAWDEN

Published by The Bruce Publishing Company, Milwaukee, Wisconsin, 1950; cloth, 196 pages. Price, \$3.00.

This new book is a welcome contribution to the relatively meager literature on the history of industrial education. It has been only 25 years, 1926, since the appearance of Anderson's *History of Manual and Industrial School Education*, and Bennett's *History of Manual and Industrial Education Up to 1870*, the first formal treatments of the history of this new field of education. With the appearance in 1937 of Bennett's second volume, *History of Manual and Industrial Education, 1870 to 1917*, these three books were virtually the history of the field. Dr. Bawden's new book not only represents a departure from the formal type of treatment of the subject, but provides, in a unique conversational style, many hitherto unpublished facts and sidelights on the pioneering leaders who have developed industrial education in this country.

In the introduction, the author points out that his book is the outgrowth of more than 15 years of experience in conducting a graduate course in leaders and movements in industrial education at the Kansas State Teachers College. But this is only one of his qualifications for presenting in graphic detail the achievements and personalities of leaders who helped make the history. Personal acquaintance with most of the leaders, in a remarkable career that has covered

nearly 55 years of service, has eminently qualified Dr. Bawden for his task.

Graduating from college in 1896, and beginning his teaching career in that year, the author devoted four years to postgraduate study, served nine years in the U. S. Office of Education, 30 years as a part-time member of the editorial staff of the *Industrial Education Magazine*, nine years in public school work, two years in university work, and 23 years in two state teachers colleges. Supplemented by travel and study in every State of the Union save one, he has had unexcelled opportunities to meet and know personally most of the outstanding leaders for more than half a century. It is out of this unique background, and rich storehouse of personal contacts, that he writes. There is no living writer who can span this period of history and write so effectively, informingly, and authoritatively of the personalities of the pioneer leaders, many of whom have long since left the stage.

Leaders whose careers are discussed in this volume are: Calvin M. Woodward, Charles R. Richards, Frederick G. Bonser, Ira Samuel Griffith, John D. Runkle, Lorenzo D. Harvey, James H. Stout, William E. Roberts, and F. Theodore Struck.

Dr. Woodward, founder of the St. Louis Manual Training School, and often called the "Father of Manual Training in the United States," and Dr. Runkle of the Massachusetts Institute of Technology, established and developed



instruction in the mechanic arts based on the Russian system, our first successful type of school industrial education. At the turn of the century, Charles R. Richards was head of the department of manual training in Teachers College, New York, the chief source of teachers in this field for that period. Frederick G. Bonser, also of Teachers College, is recognized for his contribution to the philosophy of industrial arts. Lorenzo D. Harvey and James H. Stout co-operated in making a major contribution in the early stages of the preparation of special teachers for the new field. William E. Roberts was one of the earliest leaders to develop a comprehensive program of industrial arts in a large city school system. Ira S. Griffith was the author of a number of important textbooks as well as active in teacher preparation; while F. Theodore Struck wrote important books of a

professional nature and engaged in the education of teachers.

The selection of these men as representative pioneer leaders in the various aspects of industrial education gives the reader an over-all view of the history of the field. The method of the volume might be said to be that of a biographical approach to the wider currents of an educational movement that has had its origin and developed to a position of paramount importance almost within the period of the professional career of the author. It is history as he has seen and lived it, written in a readable, interesting, personal style. It is certain to be widely read, both in and out of the profession; and for years to come it will be discovered with delight by those who wonder about the beginnings of industrial education in our early industrial age.—JAMES V. MELTON.

## Contributors to This Number

Betty Besse Bennett was appointed reference librarian in Porter Library, Kansas State Teachers College, Pittsburg, September 1, 1950.

She is a native of Nebraska, and a graduate of the Municipal University of Omaha, Neb., degree BA, 1942; of the School of Library Science of the University of Illinois, Urbana, degree BS in LS, 1943; and of the State University of Iowa, Iowa City, degree MA with Major in Political Science, 1948.

She is a member of the American Library Association, American Association of University Women, and of Alpha Xi Delta, social sorority.

She has had seven years of experience, June, 1943, to August, 1950, as first assistant in the Department of Government Documents, State University of Iowa, Iowa City. During this period she organized the U. S. Army Map Service depository, consisting of a collection of over 50,000 war maps.

Leroy Brewington was appointed assistant professor of industrial education in Kansas State Teachers College, Pittsburg, and supervisor of printing in charge of the School of Printing, effective January 1, 1935.

He is a native of Kansas and received his early training in the pub-

lic schools of Chautauqua, Kan. He is a graduate of Kansas State Teachers College, degree BS, 1931, and MS, 1934.

His teaching experience before coming to Kansas State Teachers College included nine years, 1926-1935, as supervisor of vocational printing, Senior High School, Pittsburg, Kan. He also had five years of practical experience as journeyman printer, including two years, 1921-1923, on the *South-Kansas Tribune*, Independence, Kan., and three years, 1923-1926, on *The Sun*, Herington, Kan.

He has been a frequent contributor to professional and trade journals, and for the past five years has been department editor of the monthly *Journal* of the National Council of Teachers of Printing and the Graphic Arts. He is also feature editor, *The Publisher's Auxiliary*, Frankfort, Ky.; and *The Canadian Weekly*, Vancouver, B. C.

Laurence Gilpin Cutler came to Kansas State Teachers College, Pittsburg, as assistant in printing in September, 1935, and was promoted to the rank of assistant professor, September 1, 1948.

Prior to coming to the College, he was engaged in printing and newspaper work, having served on the Abilene, Kansas *Reflector*, the Uni-

versity of Kansas *Journalism Press*, and the Newark, Del., *Ledger*. He was also for a time manager of the *Messenger Printing Company*, Caldwell, Kan.

He holds a life membership in Sigma Delta Chi, national professional fraternity in Journalism. He is a member of the National Education Association, the Kansas State Teachers Association, American Vocational Association, Kansas Vocational Association, the Graphic Arts Club, and Epsilon Pi Tau, national honorary fraternity in Industrial Arts.

For the past three years he has served as faculty sponsor for *The Kanza*, the student yearbook.

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Dorothy Genevieve Dixon was appointed instructor of library science at Kansas State Teachers College, Pittsburg, September 1, 1950.

She is a native of Illinois, and a graduate of the University of Illinois, Urbana, with the degree BS in Education, 1931, and BS in Library Science, 1937; and has completed one year of graduate study at the University of Chicago, 1949-1950. She is a member of Pi Lambda Theta, national honorary graduate society in Education; Sigma Delta Pi, honorary society in Spanish Language and Literature; also of Delta Zeta, social sorority.

Her teaching experience before coming to Kansas State Teachers College included four years, 1931-1935, as teacher of English and li-

brarian, Consolidated High School, Winnebago, Ill.; five years, 1937-1942, as assistant librarian, New Trier Township High School, Winnetka, Ill.; five years, 1942-1947, as librarian, University of Chicago Laboratory Schools; and one year, 1948-1949, as library consultant, Township High School and Junior College, Joliet, Ill. She has also had experience as librarian and instructor of library science in summer sessions, as follows: 1938, Public Library, Highland Park, Ill.; 1939, State University of Indiana, Bloomington; 1940, 1941, Township High School, Winnetka, Ill.; 1942, Northwestern University, Evanston, Ill.; 1943, Library School, University of Minnesota, Minneapolis; 1944-1946, University of Chicago; 1950, State College, Brookings, So. Dak.

In 1948-1949, she served as part-time editorial assistant on *Compton's Encyclopedia*. She was author of reports in the Annual Conference on the Teaching of Reading, University of Chicago, in 1943 and 1947, and has been a contributor to the *Bulletin* of the American Library Association, the *Subscription Books Bulletin*, and the *Civic Leader*. For several years she contributed reviews of young people's books to the Sunday Book Section of the *Chicago Daily Tribune*.

She is a member of the American Library Association, American Association of School Librarians, Illinois Library Association, Illinois Association of School Librarians, Illinois Education Association, and

the Chicago Library Club. Her activities in professional organizations include: 1937, secretary, Illinois Association of School Librarians, and president, same, 1938 and 1939, the only person ever elected president for two successive terms; 1939-1940, member of the Illinois Committee on Rural Community Welfare; 1940-1942, member of the committee on school libraries of the Planning Board of the Illinois Library Association; 1941, member of the committee on public relations, American Library Association; 1941-1944, treasurer of the Division of Libraries for Children and Young People, American Library Association; 1941-1944, chairman of the sub-committee on the *Subscription Books Bulletin*, American Library Association; 1943-1944, treasurer of the Chicago Library Club.

Eugene David Larkin was appointed instructor of art in the Department of Industrial Education and Art, Kansas State Teachers College, Pittsburg, September 1, 1948.

He is a native of Minnesota, and a graduate of the University of Minnesota, Minneapolis, degree BA, 1946, and MA, 1949. While a student at the University of Minnesota, he held an assistantship in the Department of Fine Arts for two years, 1946-1948. He also served one year, 1945-1946, as assistant to the director, University Gallery.

He is a member of Delta Phi Delta, national honorary fraternity in Fine Arts, and of the College

Art Association of America. He has been a contributor to *The Palette*, official journal of Delta Phi Delta.

Ralph Kenneth Nair was appointed guest professor in the Department of Industrial Education, Graduate Division, at Kansas State Teachers College, Pittsburg, for the Summer Session of 1950.

He is a native of Kansas, received his early schooling in Cherokee County, and graduated from the Cherokee County Community High School, Columbus, in 1931. He is a graduate of Kansas State Teachers College, degree BS with Major in Industrial Education, June, 1935, and MS, August, 1939; also of the University of Missouri, Columbia, degree EdD, June, 1950. The title of his doctor's dissertation is, "The Predictive Value of Standardized Tests and Inventories in Industrial Arts Teacher Education." The dissertation has been preserved on microfilm.

His teaching experience includes two years, 1935-1937, as instructor of industrial arts, Senior High School, Greensburg, Kan.; one year, 1937-1938, same, Pawhuska, Okla.; three years, 1938-1941, same, Westport Junior High School and Northeast Junior High School, Kansas City, Mo.; guest instructor in the summer session at Colorado State College, Fort Collins, 1940; same, University of Nebraska, Lincoln, 1941, 1942; six years, 1941-1947, as instructor of industrial education, Santa Barbara State College, Santa Barbara, Calif.; and

assistant professor, Santa Barbara College of the University of California, Santa Barbara, since 1947.

He is a member of Phi Delta Kappa, national honorary fraternity in Education; Epsilon Pi Tau, national honorary fraternity in Industrial Arts; also of Sigma Tau Gamma, social fraternity, and the Faculty Club.

He is a member of the American Vocational Association, National Association of Industrial Teacher Trainers, California State Industrial Education Association (Southern Section), and the California State Employees Association.

His World War II service included two years, 1943-1945, as supervisor of production, Lockheed Aircraft Corporation. He has served for eight years, since 1942, as chairman of the Committee on Leadership Training, for training scoutmasters, for the Santa Barbara District, Boy Scouts of America. He is faculty advisor for Sigma Tau Gamma at Santa Barbara State College of the University of California.

Theodore Melrose Sperry came to Kansas State Teachers College, Pittsburg, as assistant professor of biology at the opening of the Summer Session, June 3, 1946.

He is a graduate of Butler University, Indianapolis, Ind., BS degree, 1929; also of the University of Illinois, Urbana, Ill., MS degree, 1931, and Ph D, 1933. He was enrolled in the Graduate School, University of Wisconsin, Madison, for postdoctoral work from January to May, 1946.

His teaching experience includes one year as assistant in the department of botany, Butler University, 1928-1929, and three years in a similar position, University of Illinois, 1929-1932. In 1932-1933, he held a fellowship in the Department of Botany, University of Illinois.

He has contributed a number of articles to *Ecology*, *Journal of Wildlife Management*, and the *Transactions* of the Wisconsin Academy of Science, Arts, and Letters. A biographical sketch appears in *American Men of Science*. For a more complete sketch, see *The Educational Leader*, Vol. 11, No. 1, November, 1947, page 18.