

T H E S I S

on

A COURSE OF STUDY IN PRINTING

FOR THE PUBLIC SCHOOLS

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With Unit Instruction Sheets

And Occupational Information For

Prospective Printers or Printing Teachers

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Submitted to the

OREGON STATE AGRICULTURAL COLLEGE

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In partial fulfillment of  
the requirements for the  
Degree of

MASTER OF SCIENCE

by

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APPROVED:

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SUCCESS-BOND



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## GENERAL INTRODUCTION

1. Statement of the Problem
2. Significance of the Problem
3. Method of Procedure

## GENERAL INTRODUCTION

A. Statement of the Problem. - It has been the purpose of this study to aid in solving problems which have confronted not only the producer of printing products, the printer or printing teacher, but the prospective teacher or interested consumer as well.

This thesis is composed of four major units, each complete in itself with an introduction and summary. The four units are: Course of Study, Trade Analysis Charts, Unit Instruction Sheets, and Occupational Information for Prospective Printing Teachers or Printers.

It is believed that these four units have a very definite association each with the other. Every printing instructor must have, if he would be most successful, the ability to make and to understand the analysis of his trade; he must possess a knowledge and understanding of criteria used in organizing workable courses of study; he must be able to select, understand, and appreciate instruction sheet writing based on the best known technique; finally, all individuals are entitled to the proper occupational information for every field in which they are interested.

Administrators and teachers in the public school systems are quite often at a loss as to the choice of subject-matter content for the printing course. Especially is this true since printing has been but recently



introduced into the school curriculum.

Too often the new teacher of a new subject "gives way" to his own fancies and decides what he shall, or shall not, teach on the unsound basis of bias or personal preference. Only on the basis of a complete analysis of the trade, and when enough study and research have been carried on to determine common practice, can an adequate course of study be set up.

No matter what the course of study -- no matter what the methods of teaching employed -- no matter what textbook (if any) may be used -- a conscientious teacher cannot escape organizing his work on the basis of some plan of "fundamental learning units". The effort to determine these units in the printshop and to build a course of study about them, constitutes a major objective of this study.

B. Significance of the Problem. - There is an urgent need in the teaching of printing for a reconstruction of our courses of study, making a transfer of interest from the standpoint of producers skills to that of appreciation and understanding by the consumer.

Secondly, there is need for better understanding on the part of the teacher, of the technique of instruction sheet writing, and a realization that the instruction sheet is aimed toward greater efficiency in instruction.

Thirdly, since printing is one of the great industries of the world, and is so very widely distributed, any course



of study in printing for the secondary schools should place considerable emphasis upon vocational guidance and occupational information.

If Education should be defined as the forming of a workable philosophy of life, one which assures a normal satisfactory life for oneself and a contribution of his full share to the advancement and betterment of society-- advancement meaning a steady progress toward a desired end--then it is believed that printing instruction in the public schools can be justified in terms of its contribution to the advancement and betterment of society.

C. Method of Procedure. -

1. The major units of this thesis were worked out separately as complete theses in themselves.
2. All available reading material on each unit was checked and an index made of all likely articles on or related to the subjects. These were later examined for usable material.
3. From the usable material a few outstanding books and periodicals were selected as being of particular value for the study. Material at present in use in the teaching of printing was given especially critical examination.
4. A comparative study was made between schools and the printing industry, with reference to "learning units", in order that a careful, complete and

accurate analysis of the trade could be worked out to serve as the basis for building the new course of study.

5. A survey of instruction sheets now in the field served as the starting point for the formation of new units, as well as to show the necessity for setting up sample sheets for each type of instruction sheet.
6. A study of guidance material now in use by printing teachers showed quite an open field. The only material considered in the final selection was that which would contribute directly to the occupational information phases of this thesis.

CHAPTER I.  
COURSE OF STUDY  
FOR PRINTING

## INTRODUCTION TO COURSE OF STUDY

Printing has become one of the most popular subjects taught in the secondary school. It represents one of the great industries of the world, and one that is very widely distributed. There is scarcely a community that does not have its printshop. In school there is always a demand for printing. Indeed the demand for production work from the printing department is often so great that it seriously interferes with instruction. It is comparatively easy to "sell" the printing course to the average student. The romance of printing will appeal to any boy, if properly presented. The profession is an honorable one. The tales and traditions of the early printers are as interesting as those of any other profession. The lives of the great printers of the past century may be read with profit by all.

Changing modes of living have given rise to a questioning attitude on the part of educators and laymen as to the effectiveness of the present means of education. This has in part given rise to a general movement in schools throughout the country looking toward the construction of more reliable and worth-while curricula. Since a course of study should be capable of constant change and adaptation to changing conditions, the form should be flexible enough to permit such adjustments. While the building of a course of study is a slow and difficult undertaking and requires careful selection of material, it is valuable



alike to the teacher and to the school system. The advantages of a broadened viewpoint, an understanding of subject matter relationships, a knowledge of content, and a keen interest on the part of the teacher, result in improved instruction and will repay many times the effort put forth.

One of the aims of this thesis is to set up a course of study such that a new teacher could be provided with a guide to printing instruction that would make possible a more valid selection of subject-matter, and help to insure a greater degree of success that new teachers sometimes exhibit without such assistance. A listing of principles to be covered and jobs to be done is not sufficient. The teacher should have a guide to show the proportion of time to be spent in the informational studies as compared with the manipulative phases of printing instruction. He should know the methods to be used in order to get the most satisfactory results, and should be familiar with the standards of achievement by which the students are to be measured upon completion of the course.

The time has past when a list of jobs to be done, an outline showing the tools to be used, and a statement of the problem involved in the use of these tools, is an adequate course of study. Neither is a textbook a sufficient guide to the teacher in preparing and presenting the content offered. Recognition of the inadequacy of the older guides in teaching has called for a careful study of the



educational situation.

Some of the problems for which a solution is being sought are: What subjects should be included in the curriculum and what should be the basis of selections; in what grades should a subject be taught; should it be required or elective; what provision should be made for individual differences; what methods should be used for instruction; where should specialization begin; what are the objectives of courses and what should the students have learned at a given stage in the process of education? The solving of these problems and many others means a curriculum study with administrative and teaching adjustments.

The junior high school attempts to give the pupil a variety of experiences that will give the teacher and the pupil an idea of the pupil's interests, aptitudes, and abilities. It is the function of the junior high school, after having discovered definite abilities on the part of the pupils, to furnish opportunities for the development of those abilities to the end that they may be used either for general development or for the pursuing of a hobby as a leisure-time activity. These interests and abilities might also be used as a foundation for further vocational preparation. The senior high school, aside from being a cultural agency, is a place of preparation for further study leading to the professions, to the business world,

or to industry.

This course of study is based on the assumption that printing, as an industrial-arts subject, forms a definite part of the junior-high-school plan in that it provides for:

1. Exploratory experiences as a functional part of the curricular offering.
2. Information and skill as interrelating and interdependent factors in the educational program.
3. Occupational information for educational and vocational guidance.
4. Development of manipulative abilities as an important factor in the preparation for citizenship.

The more advanced levels of senior high school work are intended for further testing and crystallizing of interests and abilities. This period is primarily one of semi-specialization. The work should involve deeper study and be laid on a foundation much broader than that attempted in the junior high school. For some pupils the training in this period may become vocational. We may at least assume the pupil has a vocational interest in the work or is definitely interested in it as a leisure-time activity and for general informational content. For that reason definite sequences of work are suggested, based on the training required for success in industry and which will include the elements necessary for the developing of abilities in a well-rounded fashion.

## GENERAL AIMS OR OBJECTIVES

### I. Health

- A. To offer a program of printing education which will contribute to the safety and physical well-being of men and women in all the various departments of the printing industry.

### II. Vocational

- A. To constitute a unit in the development of industrial intelligence and efficiency.
- B. To provide a basis for vocational guidance training.
- C. To develop habits, attitudes, aptitudes, and practical skill, giving such technical knowledge as is pertinent to the trade.
- D. To develop some degree of skill in manipulative trade processes and to teach occupational and related technical information as a basis for advanced rating for those who may later specialize in the printing trade.
- E. To vitalize the academic subjects through correlation with creative, functional jobs in the printshop.
- F. To aid in the development of muscular co-ordination.

### III. Social-Civic

- A. To develop general traits (cooperation, loyalty, orderly procedure, etc.) which are generally desirable regardless of the occupation one enters.
- B. To develop an understanding of the industrial phases of our economic life and an appreciation for the men



in all parts of the industrial world.

C. To contribute to civic efficiency by making the individual a more self-reliant citizen.

D. To aid the consumer in the intelligent choice of printed materials, with reference to design, construction, and workmanship.

#### IV. Cultural

A. To provide for instructive, operative, and observational activities upon the play or avocational level.

B. To provide for appreciation of the art or aesthetic side of industry and reveal the unlimited field wherein lies the source of much human enjoyment and appreciation of the beautiful.

#### SPECIFIC AIMS OR OBJECTIVES

I. To familiarize the student with the printing equipment of the average printshop; teach the names of tools and materials; give instruction as to terminology in printshop practice.

II. To acquaint the student with layout and design (fitness, balance, proportion, shape harmony, tone harmony, and decoration).

III. To develop certain desirable traits, such as judgment, reasoning, concentration, speed, and accuracy.

IV. To aid in developing a better conception of the value of time by providing an outlet for worthy use of leisure.

### GENERAL METHOD

- I. The method of procedure should be definitely along the lines of the best printshop practice, at all times and on all jobs.
- II. The proper use and care of tools, supplies, and machinery should be stressed.
- III. The shop organization should include:
  - a. Experimentation
  - b. Investigation
  - c. Observation
  - d. Construction
  - e. Purposeful reading and discussion

### SPECIFIC METHOD

- I. Methods of instruction should include the wise use of the following teaching devices. Primary importance is attached to those starred.

- \* a. Demonstration
- b. Lecture
- c. Question
- d. Motion pictures and slides
- e. Field Trips
- f. Outside Speakers
- g. Reference Material
  - (1) Books
  - (2) Periodicals
  - (3) Informational Booklets
- h. Charts and Diagrams
  - (1) Special Charts
  - (2) Manufacturers diagrams, illustrations, sketches
- \* i. Written Instruction Sheets
  - (1) Job Sheet
  - (2) Operation Sheet
  - (3) Information Sheet
    - (a) Related
    - (b) Occupational
  - (4) Assignment Sheet

\* Items of primary importance.



FOR WHOM COURSE IS INTENDED

I. Three Groups:

- A. The Vocational Group looking toward entrance to the trade.
- B. The General Student Group whose formal education is to terminate with high school graduation and who take the printing courses as a form of general education, or as a semi-professional preparation for allied fields of training.
- C. The College Preparatory Group looking toward journalism, the publications field or the teaching profession.

SUGGESTIONS REGARDING CLASS ORGANIZATION

- I. Differences in ability to work and to think should be recognized, and the content of the printing course so modified that it meets individual needs and varied time schedules.
  - A. There should be certain minimum essentials to be acquired by all, the amount to lessen as the educational level rises.
  - B. Course of study content and method should be enriched qualitatively and quantitatively for the superior group.
    - a. Greater opportunity should be offered for student planning
    - b. Drill should be carefully modified

- c. Broad general principles should be stressed
- d. The amount of detailed instruction should be greatly reduced

C. Course of study content and method should be modified for students whose rate of learning is below average.

- a. Content should be concrete
- b. Large opportunity for necessary drill should be provided
- c. Involved assignments should be avoided
- d. Constant guidance and sympathetic encouragement should be given

II. For the purpose of transfer and credit evaluation, daily single-hour periods with outside assignments shall receive one credit each year, on the same basis as any other secondary school subject.

- A. Definite textual units paralleling and supplementing the printing units are recommended.
- B. It is recommended that a series of carefully-validated standard tests be worked out with an adequate number of duplicate sets for each of the units of the course of study.

III. Throughout the printing courses it is recommended that:

- 1. Jobs be small, workable units, complete in themselves.
- 2. The work be divided into units approximately one week in length.
- 3. Copying of job and duplication of original proof be discouraged:
  - (a) By having a wealth of different jobs for each unit.
  - (b) By using wall charts
  - (c) By individual instruction

4. Students be required to present layouts before starting to set type.
5. Layout be approved by the instructor before type-setting.
6. All proofs of each job be ranked and group criticism given.
7. All proofs of each job be marked individually before pupils and at the completion of each job.
8. Competition be stimulated by:
  - (a) Rewarding extra effort
  - (b) Penalizing tardiness in presenting minimum essentials

THINGS THE STUDENT SHOULD BE ABLE TO DO 1.

1. To locate instantly any letter or character in case
2. To plan a job
3. To set the composing-stick to measure
4. To hold a stick
5. To set type---straight matter
6. To take a proof on a proof-press
7. To take a stone-proof
8. To read the proofreader's marks
9. To make corrections
10. To overrun type
11. To dump a stick
12. To tie up a form
13. To distribute type
14. To put away leads and slugs
15. To care for an ink-stone
16. To set display type
17. To wash type and rules
18. To lay a case
19. To clean a case
20. To use initial letters
21. To use quotation-marks
22. To set tabular matter
23. To lock type in a galley with a side stick
24. To set a rule blank of two or more columns
25. To read and mark proof
26. To lead type
27. To set two columns in one measure
28. To set a rule border
29. To make up pages
30. To get specifications
31. To collect material for job
32. To set business cards
33. To lay out the job
34. To lock up a form for the platen press
35. To put on the grippers



36. To put a form on a platen press
37. To remove a form from a platen press
38. To put on a new tympan
39. To set the guide pins
40. To regulate the impression
41. To oil the press
42. To ink up a press
43. To wash up a press
44. To feed a job-press
45. To figure paper
46. To counts sheets of paper
47. To cut paper
48. To jog stock
49. To tab stock
50. To do hand folding
51. To set a book-heading
52. To set a calendar
53. To set a rule job in two forms
54. To set a title-page
55. To set a program
56. To set a menu
57. To set an announcement
58. To set a cover-page
59. To set typewriter type
60. To divide for colors

1. From Report of the Committee on Standards of Attainment in Industrial Arts Teaching, published by The American Vocational Association, Dec. 12, 1931, pages 28, 29.

#### THINGS THE STUDENT SHOULD KNOW <sup>2</sup>.

1. The names of the principal tools, materials, machines, equipment
2. The printer's system of measurement
3. The sizes of type
4. The component parts of type
5. The principal type faces
6. How paper is made
7. The principal kinds of paper used in printing, and the type of work for which each is generally used
8. Methods of designating quantities, sizes, and qualities of paper
9. Composition and care of inking rollers
10. Kinds of ink and methods of handling
11. The ethics of the trade
12. History of the trade
13. Opportunities and requirements of the trade
14. How cuts are made
15. The rules for punctuation

16. The rules for capitalization
17. The rules for spelling
18. The principles of balance and proportion

<sup>2</sup>•Ibid - p. 29

WHAT THE STUDENT SHOULD BE <sup>3</sup>.

I. A list of attitudes and habits which contribute to the success of individuals:

1. Industry
2. Cooperation
3. Consideration of others
4. Self-reliance
5. Readiness to assume responsibility

<sup>3</sup>•Ibid - p. 29

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2. Levetas, Printing and Typography for Beginners
3. Henry, Printing for School and Shop
4. Henry, Essentials of Printing
5. Ginsback, Printshop Arithmetic
6. Polk, Ralph W. The Practice of Printing



COURSE OF STUDY IN PRINTING

Key to Organization of Units

<u>Symbol</u>	<u>Unit</u>	<u>Example</u>
Capitals <u>in quotes</u>	Teaching units	"A"-Straight Matter
Roman numerals	Major topics	II. Setting Type
Capitals	Minor topics	A. Tools & Equipment
Arabic numerals	Operations	1. Explain tools, etc.
Lower-case letters	Type of Problem	a. Drawing case, etc.

Unit "A" - Straight-Matter Composition

I. Type Case

- A. Tools and Equipment
  - 1. Explain tools and equipment-stick, case, galley
- B. Parts of a Type
  - 1. Names of principal parts of type-ingredients of type metal
- C. Arrangement of Type Case and Location of Boxes
  - 1. Why boxes are not arranged alphabetically, cap J and U - Division of case - Distinguishing between letters, b-d-p-q-n-u, 6-9-o-o-o, i-I-l, and ligatures, ffi-ffl-ff-fi-fl
- D. Spaces and Quads
  - 1. Teach comparative thickness of all spacing material
    - a. Drawing Case and Inserting Letters and Characters in Boxes

II. Setting Type

- A. Adjusting Composing-Stick to Size
  - 1. Point system - use of pica, nonpareil, point on type, rules, leads, slugs, metal and wooden furniture
- B. Spacing and Justification
  - 1. Setting composing-stick with quads - holding stick - picking up type - posture at case
- C. Lifting type from the composing-stick and depositing on galley
  - 1. Spacing between words and justifying lines - method of wide and thin spacing - division of words

D. Indention

1. Position of stick and galley on case - lead or slug on top and bottom of type before lifting - lead or slug last line in galley

E. Leading

1. Indenting paragraphs according to size job is set - poetry indentions - run-over lines - different kinds of indentions - hanging, squared, half-diamond

F. Initial Letters

1. Define leaded and solid matter - piecing-up leads alternately
2. History - modern uses
3. Method of setting - spacing below and side of initial - capitalization - shape and tone
4. Typing up type form
  - a. Setting re-print copy
  - b. Setting manuscript copy
  - c. Manuscript and reprinted spelling lists
  - d. Poems
  - e. Lesson Sheets
  - f. Geography and History outlines
  - g. Epigrams
  - h. School Paper

III. Proof-Reading

A. Proof Press

1. Construction - method of taking a proof - washing and drying the type

B. Proofreader's Marks

1. Study of proofreader's marks - application of marks

C. Reading Proof

1. Holding copy - reading proof - revising
  - a. Taking proofs and proof-reading

IV. Correcting

A. Galley Corrections

1. Position of galley on case - correcting type in galley - lifting line in stick for correcting

B. Revising

1. Pulling revised proof - comparing with original

a. Correcting galleys

V. Distribution

- A. Position of galley on case
  - 1. Galley in proper position on case
- B. Wetting type
  - 1. Remove wooden furniture before wetting type - sponging type
- C. Holding and Distributing Type
  - 1. Holding type correctly in left hand - nicks up
  - 2. Dropping type in proper boxes, picking up word at a time - sorting spaces and quads
- D. Material in its proper place
  - 1. Leads, slugs, rules, and furniture in their proper places
    - a. Distributing straight matter

Unit "B" - Book Composition

I. Type

- A. Classification of type faces
  - 1. Roman, Gothic, Text, Italic
  - 2. Description of modified type faces
- B. Size and Style
  - 1. Sizes of type that can be bought
  - 2. Sizes of type in shop
  - 3. Distinguish different faces by comparing size, face, style and nicks
- C. Caps and small caps
  - 1. Use of caps and small caps - alignement
    - a. Drawing of type faces making dominant characteristics of old style and modern

II. Parts of a Book

- A. Half-title
  - 1. Title of book in optical center of page
- B. Title page
  - 1. Blank page opposite title page - right-hand page simple, dignified, without too much embellishment

- C. Dedication
  - 1. Dedication grouped in center of page
- D. Table of Contents
  - 1. Table of contents squared with leaders or dashes
- E. Preface or Introduction
  - 1. Preface or introduction sometimes set in *Italic*
- F. Text
  - 1. Text - one style type throughout - size - legibility
- G. Index
  - 1. Index in smaller type in two columns
    - a. School paper
    - b. Booklets on educational subjects

### III. Making-up Pages

- A. Making dummy
  - 1. Make pencil sketch of book giving exact dimensions of type page - size of type for chapter headings - margins
- B. Arranging type matter into pages
  - 1. Determining length of page, which should include slug top and bottom
  - 2. Avoid ending pages with one line of a new paragraph
  - 3. Avoid beginning pages with last line of a paragraph
- C. Page folios and running-heads
  - 1. Inserting running heads and page folios, even numbers at left, odd numbers at right
- D. Tying up pages
  - 1. Position of galley - fastening cord
- E. Pulling page proofs
  - 1. Pulling galley proofs and placing pages in storage galleys
  - 2. Keeping proofs in consecutive order
- F. Notes
  - 1. Inserting marginal and foot notes - foot-notes set in small type
  - 2. Overrunning of matter
  - 3. Running around cuts
  - 4. Lock up for foundry



5. Breaking up form for colors
6. Care of equipment
7. Checking up of tools

a. Receive books for cooking class

#### IV. Proofreading

- A. Pulling galley proofs
  1. Locking up type in galley for pulling two proofs  
one colored for dummies
- B. Reading proofs
  1. Holding copy - reading proof
  2. Pulling and revising proof

#### V. Distribution

- A. Placing type on galley
  1. Breaking-up form
  2. Untying pages
  3. Removing cuts and ornaments, then cleaning same
- B. Material in proper places
  1. Furniture, leads, slugs, rules, chase, etc. in  
their places

### Unit "C" - Job Composition

#### I. Type Faces

- A. Classification
  1. Oldstyle and Modern Roman, Italic, Gothic, Script,  
Text, Expanded, Condensed, and Swash characters
  2. Names of type faces and sizes in shop
  3. Distinguish by size, style, and nicks
  4. Series - Families
- B. Appropriateness
  1. Appropriate type faces for job
  2. Type expresses feeling
- C. Association
  1. Combining type faces in one job, shape and tone  
harmony, balance
    - a. School paper

## II. Brass Rule

- A. Different kinds in shop
  - 1. Styles in shop, hair-line, one-point, two-point, parallel and double rule
  - 2. Corner pieces
- B. Length and thickness
  - 1. Length: in nonpareils, 1 to 9 1-2 picas  
in picas, 1 to 36 picas
  - 2. Thickness: 2 points and 4 points
- C. Piecing-up
  - 1. Alternate, or break joints
- D. Tone Harmony
  - 1. Rules should harmonize with tone of type
- E. Alignment
  - 1. Rules should align with bottom of type
    - a. School reports

## III. Spacing

- A. Grouping
  - 1. Group in units; do not sprawl over page
  - 2. Caps should be surrounded by plenty of white space
  - 3. Extended letters require more space between words than condensed type
- B. Letter-spacing
  - 1. In letter-spacing, consider tall and angled letters

## IV. Borders

- A. Brass Rule
  - 1. Perfect joining at corners - use of metal furniture - allow for "squeeze"
  - 2. Avoid use of twisted and bent rules
  - 3. Rules should harmonize with type in tone
- B. Unit
  - 1. Set units in composing-stick
  - 2. Point set slug top, bottom and sides
    - a. School tabular matter

## V. Analyzing a job from Manuscript Copy

- A. Make rough pencil sketch
    - 1. Make sketch so job can be visualized
    - 2. Mark size and style of type
  - B. Size of type
    - 1. Prominent line largest; other lines in proportion to their importance
  - C. Position of type lines on the stock
    - 1. Group and mass lines
    - 2. Optical center 3:5 (Proportion for panels)
    - 3. Variety of spacing between groups
- a. School printing

## VI. Double and Triple-Column Matter

- A. Use of slugs and quads
  - 1. Method of setting double, and triple-column matter
  - 2. Tightening one line before removing slugs or quads

## VII. Setting a Letter

- A. Heading
    - 1. Position - punctuation and capitalization
  - B. Salutation
    - 1. Position - punctuation and capitalization
  - C. Body
    - 1. Indention of paragraphs
  - D. Complimentary close and signature
    - 1. Position - punctuation and capitalization
- a. Correspondence

## VIII. Commercial Forms

- A. Envelopes
  - 1. Different treatment of corner cards set 15 ems
  - 2. Return envelope composition
  - 3. Printing on flap
- B. Letterheads
  - 1. Full-size set 45 ems
  - 2.  $\frac{3}{4}$  size - note size

C. Business Cards

1. No. 26 card set 19 ems
2. No. 27 card set 21 ems
3. Border card - unusual forms

D. Statements

1. Statements set 28 to 30 ems
2. Business style - Professional style
3. Statement to fit outlook envelope

E. Labels

1. Different sizes and forms - tags

F. Announcements

1. Announcements - Removal - Opening cards, or lettersheet

G. Blotters

1. Large size with composition horizontal
2. Small size with composition vertical

a. School stationery

IX. Holiday Cards

A. Cards and Folders

1. Appropriate type-faces
2. Position of cuts
3. Border - Initial Letter

B. Two-color work

1. Two-color cut
2. Rule border in color
3. Initial in color

a. Announcements

b. Circulars

X. Society Forms

A. Name Cards

1. Men's size - Ladies' size card

B. Stationery

1. Position of type on letter sheet
2. Selection of type and size
3. Monogram in center or corner
4. Printing on flap of envelope

C. Announcements

1. Birth, anniversary and party announcements
2. Selection of type and size of card (to fit envelop)



3. Embossed cards

D. Wedding Invitations

1. Appropriate style of type
2. Cards or note-size paper

XI. Booklets, Folders and Tickets

A. Cover Pages

1. Plain or bordered page
2. Pale border
3. Decorative border
4. One style type
5. Harmony of type and decorative material

B. Text Pages

1. Selection of type
2. Initial letters - plain or decorative
3. Running heads and page folios

C. Programs

1. One-leaf program
2. Heading displayed at top
3. Four-leaf program: Cover
4. Program on two inside pages
5. Imprint - Special fold

D. Menus

1. One-leaf or folder
2. Letter-spacing of dashes

E. Tickets

1. Size and selection of type
2. Border - Ornamentation
3. Two-color job
4. Border in color
  - a. School paper
  - b. Advertising for school social and athletic events

Unit "D" - Stonework

I. Equipment

A. Name of tools and equipment

1. Names of tools used for locking up and use of each
2. Care of wooden furniture and scheme of furniture rack

B. Bearers

1. Use of bearers in rule forms

II. Locking up

A. Locking up simple job

1. Sliding form on stone - position of type in chase
2. Arrangement of wooden furniture
3. Position of quoins
4. Planing down form
5. Caution in tightening quoins
6. Quoins neither too tight nor too loose
7. Test form for loose type lines
8. Watch for bind

B. Envelopes

1. Corner card locked up in upper right-hand corner of chase
2. Head at top

C. Letterhead

1. Letterhead locked up in lower part of chase

D. Two-page Form

1. For space between pages, subtract width of type from width of paper stock, and divide this space in half for center margin
2. Columns of type a little longer than furniture to allow for "squeeze"
3. Head of pages at bottom

a. School printing of all kinds

E. Two-color Job

1. Space between type and bottom of chase (guide-edge) should be the same on both forms

III. Stone Proof

A. Taking Proof

1. Inking type with brayer
2. Moistening paper
3. Striking and lifting planer
4. Lifting paper
5. Take proof on proof press

B. Correcting Proof

1. Wash type
2. Removing line of type to stick for correction
3. Putting away type and material after correcting

C. Revising

1. Revise proof with original one

Unit "E" - Platen Presswork

I. Platen Press

A. Names of Parts

1. Name the different parts of the press: platen, rollers, disc, bed, grippers, fly-wheel, treadle, throw-off, tympan, etc.

B. Function

1. Process of taking an impression
2. Rollers taking ink from disc
3. Principle of throw-off
4. Fountain

II. Care of Press

A. Oiling Press

1. Wiping hole after oiling
2. Don't overflow hole with oil
3. Do not oil when press is in motion
4. Oil-cups

B. Washing Press

1. Clean with oily rag first - then follow with dry rag
2. Washing up for red or other colored ink
3. Oils for washing: kerosene, benzine, special type-cleaner

C. Rollers

1. Composition of rollers - adjustment
2. Care and seasoning
3. Packing for shipment
4. Rollers off type and disc when leaving press

D. Keeping wrenches away from press

1. Dangers of wrench falling into press when in motion
2. Do not leave press with tympan bales up

III. Make-Ready

A. Getting Press Ready

1. Cutting paper
2. Handling of cutter - care of cutter

B. Setting Guides

1. Placing form in bed - grippers moved away from type
2. Putting on top sheet
3. Packing

C. Impression

1. Impression on top sheet
2. Marking out and fastening guides to top sheet
3. Proving for position on paper
4. Slitting top sheet and gumming guides
5. Sealing pins with sealing wax
6. Fenders along-side of guides

D. Inking

1. Overlay under tympan
2. Underlay back of type form
3. Patching up broken letters
4. Cutting out rules and leaders

E. Envelopes

1. Initial inking (quantity)
2. Holding ink on left side of disc
3. Different kinds of ink for different stock
4. Mixing inks

F. Backing up Cuts

1. Marking out on envelope - cutting out
2. Pasting on second sheet
3. Cardboard between first and second top-sheets

G. Register Jobs

1. Mark out on back of printed sheet
2. Cut out heavy parts
3. Patch up light parts
4. Glue on second sheet
5. Repeat operations if necessary

H. Tint Blocks

1. Print form containing greatest amount of type
2. Do not change position of guides until after the first color is all printed
3. Make ready for half-tones
4. Watching colors
5. Clean wash-up
6. Heavy impression required

- a. All kinds of school printing



#### IV. Bronzing

##### A. Ink

1. Print job in light-colored ink

##### B. Method

1. Before ink dries, dust powdered bronze with piece of cotton
2. Clean off bronze with another clean piece of cotton

#### V. Feeding

##### A. Feeding Job

1. Method of picking up paper and putting against guides
2. Taking off paper without soiling job
3. Do not jog paper immediately after printing
4. Spreading on rack to dry
5. "Flipping" a sheet
6. Watching "color"
7. O.K. before feeding

##### B. Envelopes

1. Feeding with closed and open flaps
2. Putting into box after printing

##### C. Backing up

1. Do not back-up until one side is dry
2. Slip sheeting

##### D. Register Jobs

1. Caution in getting every sheet against the three guides
2. Results if some are not printed straight

#### Unit "F" - Linoleum Block Engraving

#### I. Design

##### A. Kinds of Designs

1. Brush - stroke designs - avoid fine lines
2. Silhouettes

##### B. Preparation of Linoleum Block

1. Mounting linoleum on wooden block, type-high, about 15/16 of an inch
2. Whiten block with chalkdust or powder

C. Painting design on linoleum block

1. Reproduce design on linoleum block in reverse
2. Left side to appear on right, like photographic negative
3. Lettering in reverse

D. Tracing Method

1. Tracing on folio or tissue paper
2. Carbon paper next to linoleum block
3. Reverse tracing on top of carbon paper
4. Fasten all three with thumb tacks or gummed paper
5. Transfer is made with sharp-pointed pencil
  - a. Cover design for school paper
  - b. Inserts for school paper
  - c. Book-plates
  - d. Holiday cards

II. Engraving

A. Tools

1. Tools used: veining tool, skew chisel, gouges, etc.

B. Key-Block

1. With veining tool, outline design as if it were to be printed in one color

C. Reproducing key design on other blocks

1. Lock-up key-block in center of chase
2. Impression on top sheet
3. Heavy inking
4. Lift form
5. Remove key-block and substitute plain block
6. Remove rollers
7. Close up press tightly to secure transfer of design on the plain block
8. Repeat operations until a separate block is made for each color

D. Engraving for different colors

1. Part to be left in relief should be shaded with pencil
2. With veining tool, outline design, cutting directly on line
3. Gouges used for cutting away large masses
4. Prove, and trim ragged lines
5. Ink printing surface and allow to dry over-night
  - a. All school printing in which it is desired to illustrate or embellish

### III. Printing from Blocks

#### A. Make-Ready

1. Make-ready same as on type form; two tympan sheets
2. Setting guides, etc.

#### B. Feeding

1. Striking all three guides
2. Slip-sheeting
3. Drying on racks
4. Before printing next color, see that previous one is dry
5. Careful feeding

#### C. Ink

1. Mixing inks: clean knives
2. Tubes covered
3. Color theory
4. Matching colors

### SUMMARY FOR COURSE OF STUDY

The greatest need at the present time in course of study building is research of a nature that will provide for a scientific evaluation of present practices. In the absence of any knowledge of such research it seems well to list certain departures from normal procedure that have been used in the presentation of this thesis.

The suggested changes in the basic procedure ordinarily used in formulating courses of study are that:

1. Aims and purposes of education be reorganized to meet the present needs of society.
2. Aims, method, and content be harmonized.
3. New subject-matter be introduced where necessary to meet the reorganized aims and purposes of education.
4. Subject-matter be retained or introduced only on the basis of use--not tradition.
5. Teaching method should emphasize "How" to think rather than merely "What" to think.
6. General educational activities should stress occupational information and appreciation of the field represented; Vocational education activities should stress related information and skill.

The above recommendations are based upon:

1. A thorough study of the situation.
2. A working body of materials in the center of attention rather than in the margin.
3. A set of criteria applied uniformly to all subjects.
4. A broad perspective of the relationship of the different branches of study.



Recommended sources of materials for determining the aims of any subject:

1. Analyses of:
  - a. Social needs of adults
  - b. Social needs of learner
  - c. Educational objectives
  - d. Newspapers and magazines
  - e. Social statistics
2. Experimental studies of:
  - a. The present achievement of pupils in printing
  - b. The validity of present aims
  - c. The superiority of the new aims
3. Opinions of competent persons as to:
  - a. Needs of adults
  - b. Needs of learner
  - c. Aims at present being achieved
  - d. Aims that ought to be achieved

It is believed that the aim of printing work in the junior high school should give less emphasis to purely vocational objectives, and develop more fully the educational objectives that seem to meet unspecialized needs in relation to the common activities of life.

Recommended factors for determining sequence of subject units:

1. Relative value in meeting the aim of education
2. Relative value in meeting the common activities of life
3. Economy in learning
4. Pupil interest
5. Probable future use
6. Articulation

Recommended factors for determining selection of content:

1. Study possible sources of content of subject
2. Set up criteria for the selection of content
3. Select tentative content which appears to function in relation to the aim
4. Apply the accepted criteria in the evaluation of the selected content
5. Eliminate content that does not meet the criteria or the aim
6. Check carefully the content and the aims to see that there is a direct relationship between the two.

Recommended factors for determining selection of method:

1. Study all possible methods, both general and specific, that may apply to the subject
2. Set up criteria for the evaluation of methods
3. Include only those which seem best to meet the criteria
4. Harmonize aims, content, and method
5. Write type lessons wherever necessary

Qualifications necessary to write a good course of study:

1. An abundance of valid ideas
2. Technique of analysis and comparison--ability to evaluate materials in relation to criteria
3. A thorough knowledge of course of study technique
4. Outstanding ability in organization
5. A research attitude
6. Spirit of cooperation
7. Ability to use good English

8. Ability to write interestingly

Bases upon which a course of study should be judged:

1. General aims
2. Specific aims
3. Selection of content
4. Organization of content
5. Selection of method
6. Organization of method
7. Mechanical features

CHAPTER II.  
GRAPHIC ANALYSIS OF  
PRINTER'S TRADE



## INTRODUCTION TO ANALYSIS CHARTS

The teaching of a trade or any other subject always involves the solution of many problems having to do with subject-matter and equipment. Before a satisfactory procedure can be initiated the instructor must decide,

1. What to teach, and
2. How to teach it

The most logical way to decide what to teach is to make a trade analysis, listing all of the things a person must know and be able to do in order to become an efficient worker in the trade or activity represented.

It is impossible to teach all the things the student should know, or to develop all the skills one should possess, in the time allotted to the average shop course. It is, therefore, necessary for the instructor to pick from the total content those things most necessary for the good of the student, and those things which aid in realizing the aims set up.

If the purpose of the course is trade training, more emphasis must be placed on developing a degree of skill in the most commonly used and fundamental operations. The organization and presentation should be such that the student will also develop the ability to secure further information for himself when on the job.

If, on the other hand, the purpose of the course is general education, then more emphasis should be placed on

developing general understanding and appreciation with less emphasis on the degree of skill in operations. The organization and presentation should be such that the maximum good shall be obtained by the greatest number of individuals.

The accompanying trade analysis chart on printing indicates five major "blocks" or divisions, as follows:

1. Kinds of Establishments
2. Kinds of Products
3. Kinds of Workers
4. Kinds of Units of Work
5. Basic Things Done

Under each of these main headings smaller units are shown, with special emphasis upon the development of the fifth unit, basic things done, with which this study is directly concerned. It is upon these basic operations that the whole field of technical and related printing information revolves.

On the right hand side of the chart appears a list of projects or jobs that can be used as a medium by which to teach the desired operations and items of information. These are arranged in the order of difficulty of the operations involved. On the same side, the related technical and occupational information is shown in relation to each job listed, with references as to where each item might be located.

The order in which the operations should be performed is shown by the sequence of numbers listed in the

spaces provided.

After the content of the course has been determined, the next consideration is the method of teaching. The large classes found in our modern school shops, and the varying rates at which students work, make the old methods of class demonstrations and lectures inadequate. Individual instruction sheets have been developed in order that the instruction under these new conditions might be improved.

The second chart shows the manner in which printing as a school subject should be routed through the different types of schools.

CHAPTER III.

UNIT INSTRUCTION SHEETS



## INTRODUCTION TO UNIT INSTRUCTION SHEETS

Any worth-while program or technique in education must be based upon a sound philosophy. Unless instruction sheets are a contributing factor in a well-thought-out educational program, their use cannot be justified. Any teaching device, no matter how valuable, must be an integrated unit in a comprehensive scheme or its values will be largely dissipated.

Present-day education demands a less formal procedure or classroom method. It requires more opportunity for self-control, self-direction, self-appraisal, and creative effort, with results or goals in terms of ideals and powers rather than in terms of subject-matter and skill. Skill and knowledge will be resultant by-products and will still be essential as a means to an end, the end being worthy individual and social ideals, attitudes, and abilities.

A democratic or student-control method of classroom organization forms the basis for achieving these goals. With the informal student control allowing more choice on the part of the student, the teacher finds the traditional list of projects obsolete. He will also find it awkward, if not impossible, to assign individual projects, give numerous and lengthy demonstrations and carry out all of his other responsibilities effectively. This is especially true in the general shop. The only answer to the

problem is some form of lesson or instruction sheets.

The traditional job sheet is not adequate for several reasons. It is written on a basis of teacher direction with subject-matter and skill as exclusive goals. The new education must provide for goals in terms of worthy individual and social purposes and allow for individual student choice and self-direction. The answer has been a new type of individual instruction, the instruction sheets for which should have the following characteristics:

1. Stimulate the student to worthy individual and social purposes.
2. Reveal to the student the many opportunities of the course.
3. Serve the needs of students of varying abilities, and cater to individual differences through a variety of optional and graduated assignments.
4. Serve as a means of enriching the experiences of the student by presenting the real values in the cultural heritage of the race.
5. Make all the teacher's time available for giving individual assistance where students desire or require help in solving problems that involve purposing, planning, executing, judging, or generalizing.
6. Serve as a solution for the large class problem in an adequate and efficient manner.
7. Relieve the teacher of many of the formal demonstrations and lectures that are too often inadequate, spontaneous, and energy consuming. Students who are absent, slow thinking, or unable to see clearly, miss these traditional demonstrations with a consequent loss of time for both teacher and student.
8. Make it possible to eliminate the formal textbook as the only means of supplemental instruction.

An adequate number of carefully selected reference books should, however, supplement the instruction sheets.

The traditional shop course was formerly introduced to the students by a long series of demonstrations covering every process and operation that would be required during the course. Active students resent having to listen when they might better be digging out much of the information for themselves. This situation can be solved by means of adequate instruction sheets.

The following definitions describe the general characteristics of each type of sheet and where it may be used:

1. The contract sheet is a teaching device to be used by the teacher in presenting to the class the opportunities in each large unit of work. It should replace the traditional verbal assignments, and replace or supplement, as far as possible, the stimulating and orientating oral discussion usually given by the teacher when a new project is launched. The contract sheet should contain stimulation; orientation; a minimum of supplementary information; a description of the methods to be used; assignments of activities; and references to texts, operation and information sheets that are available. Any contract sheet should keep the entire class interested and profitably occupied over the rather definite period of time allotted to the topic involved.
2. The operation sheet should describe specific operations or processes in explicit detail. It should be available to the students whenever they see a need for some specific instruction. Practice exercises should be suggested but the instruction sheet should not contain project assignments. This type of sheet should, as far as possible, supplement, or take the place of the traditional demonstrations.
3. The information sheet is a means of furnishing rather complete and related technical information to the student who desires more knowledge upon any specific topic that has been suggested by the



contract or operation sheet. It should be concise, accurate, and adequate to the needs of the students.

The author believes the following points to be good criteria for the writing of operation or information sheets:

1. Introduce the operation or information sheet with a short paragraph or two that will "stimulate" the student, and "orient" him on the topic or project.
2. State a "purpose" or reason for each lesson, and for each assignment or operation or bit of information in terms of the pupils needs. Assume that the material has not been within the scope of the student's past experiences. Let him know in what way the lesson will aid him.
3. Begin all descriptive paragraphs with "positive statements" that go right to the point and convey the essence of the entire paragraph.
4. Divide the sheet into specific parts and use suggestive headings to represent each division.
5. "Write directly" to the pupil. Give the impression that the lesson is written as a service to him individually.
6. Do not tell anything that can be put into a simple assignment for the student himself to do. This will provide a means for the pupil to take a "personal inventory" of his past experiences, and it will reveal the need for further instruction or learning. The assignments should be designed so as to meet the needs of various levels of ability and aptitude of the students:
  - (a) Assignments on the lower level should contain teacher directed activities involving the real values in the cultural heritage of the past. They should constitute exercises or projects involving the minimum essentials for the course. From 40 to 60 per cent of the students will be unable to accomplish any more than this assignment.
  - (b) Assignments for the average should involve the application of the facts presented in the lesson and lower level assignment. They should allow a variety of choices within definite limits



and should be additional work that only 20 to 30 per cent of the students can do.

- (c) Assignments on the upper level should involve "free choice" on a "creative level" for the best 5 to 10 per cent of the students who have original ideas and the ability to express them.
7. All activities and discussions should be based on the normal, natural, choices, experiences, and abilities of the pupil. The emotional reactions of a student of the age for which the lessons are being written must be considered.
  8. A picture is more easily understood than the written description and should supplement it. "Illustrations" should be used as a means of showing methods, procedures, etc., whenever possible. Sketches are adequate in most cases, but actual photographs reproduced in halftone cuts should be used where sketches are not clear.
  9. The list of "references" should be specific and exhaustive.
  10. If properly developed, the instruction sheet should be self-administering and self-instructive. The teacher's time is too valuable to be spent in clerical work and avoidable routine or repetition of lectures.

A specific definition of the various instruction sheets and their uses, is given on the following pages in connection with directions for the preparation of those sheets. Following the specific directions for organizing the subject-matter and writing the various forms of instruction sheets will be found a group of typical operation, job, information, and assignment sheets.

Directions for Writing  
Instruction Sheets

Specification : TO WRITE AN OPERATION SHEET

Orientation

Definition : An OPERATION SHEET is a form of instruction sheet in which definite and specific directions are given for the performance of an operation as it would be done in handling any ordinary job.

Where used : Operation sheets are of great value where definite instructions are to be presented to members of a group who are unequal in attainment, ability or aptitude, and where the operations covered are those occurring frequently in the type of work covered.

When used : Operation sheets are applicable to any job in which the particular unit of instruction is involved.

Why used : Operation sheets are based upon the idea of breaking any subject down into its respective units of operation or fundamentals. Each of these fundamental units or processes may then be covered in a carefully planned manner, proceeding in the instruction on the same basis as though presenting the idea to a single individual who knew nothing of the operation in advance. This simplifies the task of the teacher, utilizes to better advantage the time of both the instructor and the pupil, enables the latter to assume the responsibility for the performance of the work, and so develops the initiative of the pupil while giving the instructor time to look after more important details of his work that must have personal attention.

Advantages and Disadvantages : The material presented is carefully worked out, omits no important information, contains no unnecessary subject-matter, as it can be gone over in advance until complete. It should be better organized than an oral presentation could be. Instructions may be read and re-read by the pupil until understood, while he must remember an oral presentation or make notes on same. Hence, the use of Operation sheets makes possible the handling of a wider range of work in the shop, to a wider range of



purpose groups, with less demand of unnecessary routine on the class-room time of the instructor, and facilitates a more orderly handling of the work. It does not do away with the need for demonstrations, nor does it save in the total time of the instructor, for the preparation of this material takes much time and thought. Neither does the use of this form of instruction relieve the student of the necessity for thinking his way through a problem. It merely provides such specific information as will enable him to so think and act as to produce the maximum results in the minimum time, thus resulting in better and more effective teaching.

- Tools and  
Materials :
1. Adequate supply of paper; pencil, pen or typewriter.
  2. Reference library.
  3. Adequate technical information and advice.

Procedure :

1. Analyze the field
  - a. Skim through available literature on instruction sheets
  - b. Segregate or make list of all literature bearing directly upon the subject of operation sheets
  - c. Analyze the subject from this restricted list
  - d. Make a review of your knowledge
2. Select and justify the operation on the basis of :
  - a. Types of instruction involved: general, exploratory, specific
  - b. The needs of the pupil, his purpose and past experience
  - c. The operation: its
    - (1) Frequency of occurrence in the trade
    - (2) Significance to the subject
    - (3) Economy involved in the teaching of the subject
    - (4) Availability of instruction outside school channels
3. Select and read reference material which covers the further restricted choice of the operation
  - a. Secure the advice of expert technicians
  - b. List references for further use
  - c. Organize the materials thus obtained



4. Write an introductory paragraph showing:
  - a. Definition of operation chosen
  - b. Where, when, and why used
  - c. Advantages and disadvantages
5. Leave space for listing of tools and materials
  - a. Proper arrangement of above depends upon a logical working out of the material to follow
6. Set up the major analysis
  - a. Jot down things to be done in order to perform the operation, in this case to write an operation sheet.
  - b. List all simultaneous operations in same step
7. Check the major analysis
  - a. Make use of the following criteria in checking above:
    - (1) Shortness or conciseness of phraseology
    - (2) See that all expressions are in the second person
    - (3) See that a logical sequence of performance is followed
    - (4) See that only those things which must be done are listed
    - (5) See that all of the needful things are listed, i.e. check for completeness
8. Set up the minor analysis
  - a. List in logical order the things which you must know in order to do the operation
  - b. List in terms of what you do, why, when, and where
9. Check the minor analysis
  - a. See that information is
    - (1) Complete
    - (2) Expressed in the second person
    - (3) Arranged in the most logical order
    - (4) Expressed in short, concise fashion
    - (5) Adequate and easily understandable
10. Write the technical information and prepare illustrations
  - a. Keep the information brief and to the point
  - b. Make information complete--include all necessary data
  - c. Secure authentic information
  - d. Make use of illustrations such as
    - (1) Photos
    - (2) Sketches
    - (3) Drawings

- e. See that legends adequately describe illustrative material
- 11. Check technical information
  - a. Verify the steps listed above
  - b. Verify the authorities for adequacy and public or expert acceptance
  - c. See that acceptable trade terminology is used
- 12. List tools and materials
  - a. Run through all the above items, selecting and listing the tools and materials needed to carry out each instruction
  - b. Enter this information, after careful checking, in space provided under step #5
- 13. Write the questions
  - a. Call attention to vital points as they appear under the procedure as listed above
  - b. Use the assignment type of question
  - c. Arrange in the logical sequence according to above
- 14. Select and list related reference material, both technical and occupational, written in the mental level of the pupil

Questions :

- 1. Give reasons for the use of the operation sheet with reference to other forms of instruction.
- 2. Did you experience difficulty in locating satisfactory reference material? If so, what did you do to overcome this handicap?
- 3. What difficulties did you experience in setting up the major analysis?
- 4. What technical aid or expert advice enabled you to locate the material needed for the minor analysis? For the technical information? For the proper illustrative material?
- 5. Was the reference material chosen for the use of the students so written as to be within their range of comprehension?

Specification : TO WRITE A JOB SHEET

Orientation

Definition : A JOB SHEET is a form of instruction sheet in which definite and specific directions are given for the performance of the operations as they would be done in handling a definite job.

Where,  
When,  
Why, used :

The Job Sheet is applicable to the handling of simple, small, unrelated jobs, which may occur more or less frequently in the lower levels of work with immature pupils. This form of instruction sheet is especially applicable in courses similar to printing, where definite and specific operations must be done on certain types of jobs, which operations are not common to all jobs. Similarly, in home mechanics, it can be efficiently used in handling the operations involved in repairing; for example, a faucet, where a certain size and style of washer is used and where the faucet is separated at a definite point, together with certain fittings. This type of sheet would not apply in the case of an operation for any ordinary job.

Tools and  
Materials :

1. Supply of paper and suitable writing material.
2. An adequate supply of reference material.
3. Adequate technical information and advice.

Procedure :

1. Analyze the field
  - a. Refer to item in operation sheet
2. Select the job and justify on the basis of:
  - a. Needs of work - only certain jobs to be written
  - b. The job-its:
    - (1) frequency of occurrence in given levels
    - (2) significance
    - (3) economy of teaching effort
    - (4) availability

It is only the small, unrelated jobs which are to be handled in job sheet form - so above factors must be considered in reverse order from that taken in operation sheet.



3. Select and read reference material
  - a. Refer to operation sheet
4. Write an introductory paragraph
5. Leave space for the listing of tools and materials
6. Set up the major analysis
  - a. Pattern after instructions for operation sheet
7. Check major analysis
  - a. Follow instructions 1-5 inclusive for operation sheet
8. Set up the minor analysis
  - a. Follow instructions in item #8 for operation sheet
9. Check the minor analysis
  - a. Follow instructions in item #8/1-5 for operation sheet
10. Write the technical information and prepare illustrations
  - a. See operation sheet item #10
11. Check above step
  - a. Same procedure as for operation sheet
12. List tools and materials
13. Write the questions
14. Select and list related references, material that is both technical and occupational and written in the level of the child's grasp.

Questions :

1. Describe the difference in character and detail between job and operation sheets.
2. Compare advantages and disadvantages of the job sheet.
3. Where is it possible to find satisfactory reference material?
4. What things made it difficult to write this job sheet?



Specification : TO WRITE A RELATED INFORMATION SHEET

Orientation

Definition : A RELATED INFORMATION SHEET is a form of instruction sheet in which the information given is not necessary to the actual doing of a job or an operation in a given field, but is desirable to have and essential to the best informed procedure.

Where,  
When,  
Why, used : To prospective tradesmen or tradesmen in the field, related information is not necessary in performing skills but is essential for completeness of trade information and better judgment. It is of value from the exploratory viewpoint. It is of value to all who will become consumers of the product, and for this reason it is of value to all industrial arts students even though a small minority of each class enter that particular trade.

Advantages and  
Disadvantages : Related information sheets conserve much of the pupils time. They give precisely the information essential to be added to that which the student acquired in doing the job. They do this with a minimum of waste time and haphazard routing, because superfluous reference material is eliminated. The systematic checking of valuable reference material as done by the trained instructor is much more efficient than if left to the student. For quick reference this material is readily available. The pupils mind need not be filled with an enormous amount of remotely related facts. Preparation of related information involves a great deal of extra work for the instructor, but the results attained are worthy of it. Success of teaching is measured in terms of what the pupil is getting out of each course, therefore, this form of instruction can be made very effective.

Tools and  
Materials : 1. Refer to the instructions for writing an operation sheet.

Procedure :

1. Analyze the field in which you wish to present material

- a. Distinguish between related and applied technical information
2. Select the particular phase of related information you desire
  - a. Get pointers from operation and job sheets
3. Select and read reference material on above
  - a. Refer to instructions for operation sheet
4. Write an introductory paragraph
  - a. Show whereby the information given affects and relates to the field being studied, and its value to the student
5. Set up the major analysis
  - a. Arrange the material according to topics and in logical order
6. Check the above step
  - a. Refer to instructions for operation sheet, procedure 7, steps 1-3 inclusive
7. Write the minor analysis
  - a. Refer to instructions for operation sheet but ignore reference to "doing the operation".
8. Check the minor analysis
  - a. Refer to instructions for operation sheet, procedure 9, steps 1-5 inclusive
9. Write out detailed material and prepare illustrations
  - a. Refer to instructions for operation sheet, procedure 10, steps a to e
10. Check above step
  - a. Refer to instructions for operation sheet, procedure 11, steps a to e inclusive
11. Write questions covering the above material
  - a. See instructions for operation sheet, procedure 13, steps a to e inclusive
12. Select and list reference material for students use

Questions :

1. Compare make-up and purpose of related information sheets with that of the operation sheets.

2. Compare make-up and purpose of related information sheets with that of the job sheets.
3. What are the merits of this particular type of instruction sheet?
4. To the non-technical students what other methods of instruction would you like to use to supplement the related information sheet?



Specification : TO WRITE AN OCCUPATIONAL INFORMATION SHEET

Orientation

Definition : An OCCUPATIONAL INFORMATION SHEET is a form of instruction sheet in which information is given that will enable one unfamiliar with the occupation to form a good concept or idea of this particular occupation. It should include such information as the number of persons engaged, whether this represents a surplus or shortage of those needed to carry on the work, and the conditions of work, as wages, hours, health provisions, etc., that any person interested in choosing the occupation for a life career should know in advance of the choice.

Where,  
When,  
Why, used :

Occupation information in its broad viewpoint is very essential in the guidance program. Students taking exploratory courses should not be handed dry statistics, but the most important things should be given to form a mental picture for any intelligent person who might choose to enter the trade or profession. It should be extremely detrimental to introduce dry technical information at this particular stage; also to insist on minute detail.

Advantages and  
Disadvantages : Proper occupational information is essential to successful guidance since there is nothing so important in the life of any student as to find and then enter advantageously the type of work for which he has aptitude and for which there is prospect of satisfactory earning-power. Occupational information sheets, when carefully prepared, give the individual a method of searching and comparing many fields. With a high degree of accuracy he is able to narrow the field of his choice. After he has done this he has automatically cut down the range of exploratory work which he needs to undertake. Thus, the chance of making an early choice and therefore of making use of that adolescent enthusiasm is increased. Surveys have shown that choices made as early as the seventh and eighth grades are followed up to a very large extent.



One of the greatest problems of education is to aid the student in reaching a decision of what to do and where to go to do it. Chances for success and progress are much better if the individual is able to make an early decision, based upon proper guidance and adequate information. With the foregoing underlying principles in mind these instructions for the preparing of occupational information sheets are given.

Tools and Materials :      1. Paper and writing materials.  
                             2. Adequate reference material.  
                             3. Expert advice from the guidance standpoint.

Procedure :

1. Analyze the field of business or trade represented
  - a. Go through sources of occupational information
  - b. Segregate material of value from guidance standpoint
  - c. Analyze content of this restricted list and organize
2. Select the occupation on which you desire information
  - a. Individual interests and aptitudes may be ignored in preparing information, since pupils must work to earn livelihood, but must not be ignored in the guidance application of the gathered data
  - b. Arrange occupations in order of :
    - (1) Frequency of occurrence in our industrial life
    - (2) Significance with relation to our economic situation
    - (3) Cost of preparation for entering with best advantages
    - (4) Availability of methods of preparation for entrance
3. Read reference material referred to in item #1
  - a. Refer to instructions for operation sheet
4. Write introductory paragraph
  - a. Refer to instructions for operation sheet, step #4
5. Set up the major analysis
  - a. Break down material into headings or topics such as, persons employed, average wages, hours of work, health conditions, chances for

advancement, etc.

6. Check the major analysis
7. Write minor analysis
  - a. Using material obtained thus far, fill in necessary information under the headings given above
8. Check the minor analysis
9. Write out the detail material and prepare illustrations
  - a. Elaborate on the skeleton outline of material, preparing for understanding on pupil level
10. Check above step
11. Write questions
12. Select and list the sources of your information, for further detailed study by those who are interested, or for authenticity

Questions :

1. Distinguish between related technical information and related occupational information.
2. Which of the above seems to become of personal interest and which one is merely interesting information?
3. Did you find it difficult in staying away from presenting dry statistics?
4. Did you present your material in such a way as to present a clear picture to the student?
5. Did you make your presentation more pleasing by the use of colorful illustrations?
6. Did you find difficulty in eliminating extraneous material, or of including too much "wordy" material?

Specification : TO WRITE AN ASSIGNMENT SHEET

Orientation

Definition : An ASSIGNMENT SHEET is a special form of information sheet to be used as an outline in directing study, reading and observation on any given subject.

Where,  
When,  
Why, used : In such subjects as science, mathematics, and English, where much of the work done is with textbooks, these sheets are of great use. In the field of industrial arts this type of information sheet may be used to supplement the other types of sheets in presenting technical, related or occupational information.

Advantages and  
Disadvantages : Assignment sheets are advantageous in that they aim toward a goal of definiteness, clearness, and a minimum of waste time. They do this by stating the sources of information with exactness. The questions used are intended to direct the reading of the student and to guide the students observation and thought as he progresses from point to point. These questions call for written answers which require thought and initiative on the part of the student. He must plan his work and make carefully arranged details, if the sheet is to serve its purpose. This sheet is a great help in working with students of high intelligence, or of unusual ability as they may be assigned work in keeping with their abilities.

Procedure :

1. Analyze the field of information and instruction sheets
  - a. See and observe instructions on writing an operation sheet
2. Select material that is suitable for assignment
  - a. See same step under instructions for writing operation sheet
3. Select and read suitable reference material
  - a. Apply points under this step in writing an operation sheet



4. Write an introductory paragraph
  - a. Specify the job or assignment
  - b. Give directions as to how to proceed
5. From this point make a rough draft on material; arrange to suit needs, then transfer to a final sheet
  - a. Break down the assignment topic into its major divisions
  - b. Check above step, following operation sheet instructions
  - c. Subdivide major topics into minor divisions
  - d. Check above step, following operation sheet instructions
  - e. Select from this outline the material which you wish the students to learn. Work out carefully planned questions that will :
    - (1) Require the student to make careful study of the material chosen
    - (2) Call for close and keen observations
    - (3) Require some good initiative in thinking out the whole situation
  - f. Identify and label the reference material which will give exact and satisfying information to all of the questions listed
  - g. Arrange the questions in a logical order
  - h. Check above steps according to operation sheet instructions
  - i. Arrange all reference material in such an order as to be easily identified and organized by the student, giving author's name, name of book or name of article and magazine, volume number and page
6. Proceed with the final draft of assignment sheet
  - a. List all questions referred to above
  - b. List references giving complete information concerning sources

Questions :

1. What distinguishes the assignment sheet from :
  - a. the operation sheet
  - b. the job sheet
  - c. the job plan or operation schedule
  - d. the related information sheet
  - e. the occupational information sheet
2. Why is it advisable to break up the information into a topical outline before proceeding with questions?
3. How important a place should the assignment hold?



Typical Instruction Sheets

For

A Course In Printing

OPERATION SHEET

Specification : TO SECURE "FITNESS" IN A LAYOUT FOR A  
DISPLAY JOB

Orientation

Definition : FITNESS implies that the general plan of the job, as well as its various details, shall be intelligently arranged, and in close harmony with the nature of the work at hand. Before planning a job, the question should be asked, "What is the nature of the proposed job, and how will it best accomplish its purpose?" The plan adopted should be a fitting answer. The workman who is trained to apply these principles naturally in his everyday work will produce good printing just as economically as inferior printing. It is no more difficult to set and print well designed jobs than poor ones. A typographer must understand the fundamental principles exceptionally well before he can develop a sense of design.

Tools and

Materials : Layout paper, pencil, rule or line gauge, and a type catalog.

Procedure :

1. Break up the copy
  - a. Break up wording in lines of logical units
  - b. Emphasize more important items
  - c. Bring out each group in proportion to its importance
  - d. Leave out unessential details
2. Plan the job for simplicity
  - a. Have a simple and orderly arrangement of the design
  - b. Use few type faces
  - c. Use as few type sizes as possible
  - d. Keep type sizes in series
  - e. Use decoration sparingly and appropriately
3. Select the type for appropriateness, according to:
  - a. Nature of the content of the job
  - b. General size and shape of job
  - c. Character of the stock on which it is to be printed
  - d. Relative emphasis to be given various phrases, etc.

4. Choose appropriate borders
5. Choose appropriate ornaments or illustrations

References :

1. Hague, C. W. Textbook of Printing Occupations  
"Elements of Design" - pages 85 to 93 inclusive.
2. Polk, Ralph W. The Practice of Printing  
"Fundamental Principles of Display-Fitness" -  
pages 175 to 178 inclusive.

Questions :

1. What question should be asked before starting a layout?
2. What can you say about simplicity in the planning of a job?
3. Why is it necessary to break up the copy?
4. Does the "exercise of good common sense" play much of a part in planning a layout?
5. Would it be better to have no ornaments or decoration rather than inappropriate ones? Why?

OPERATION SHEET

Specification : TO SECURE "BALANCE" IN A LAYOUT FOR A  
DISPLAY JOB

Orientation

Definition : The principle of BALANCE is one of the basic elements of design which aids in the planning and arranging of type matter and groups of type upon the page. In order to produce correct display printing, the words or groups which comprise the copy must be balanced on the page or sheet. By the term "balanced" we do not mean centered, as the optical center, or center of attraction, is not identical with the mathematical center of the page. The old tendency to place material upon a page in a regular monotonous order, with even spacing throughout, is no longer in practice. To persons of normal vision, a perfect square will appear to be slightly flattened. Also, a point located in the exact center of a rectangle will appear to be below the center. Type designers recognize this fact and place the cross strokes on such letters as B-E-H and S slightly above the center of the letters. In printing, allowance is made for this illusion, and the center of attraction, or center of balance, is considered to be slightly above the mathematical center of the page. A page of display matter almost invariably contains several distinct ideas, which, although they be related to each other, have a varied value in their purpose, and may be more attractively arranged into groups divided by white space. Each group is usually a selection of more closely related ideas, which may be set together so that they may be displayed with about equal importance. When several unrelated ideas are to be placed on the same page, there will be no trouble in determining the content of the groups, and they may be arranged according to their respective values. The position of the groups depends upon first, their own value of importance; and second, upon their relative size and weight in giving the page as a whole a balanced appearance.



Tools and

Materials : Layout paper, pencil, rule or line gauge,  
and a type catalog.

Procedure :

1. Find center of balance on the page
  - a. Divide page into equal parts (eight); the point located three units from the top and five units from the bottom is the center of balance on the page. The smaller part is to the larger part as the latter is to the whole.
2. Place a single line of type on the page, placing it on this line of balance.
3. Place a group, or mass, of matter, the center of which should be located at this point of three-to-five balance on page.
4. Find balance between two groups of same size and tone
  - a. Place on page so that their centers will be equidistant from the line of balance.
5. Find balance between groups of unequal sizes
  - a. Draw a line from center of one group to the center of the other, and then divide line at such a point as will give each group a distance on the line that is inverse ratio to the size of the group. The point thus determined is the point of balance between the groups. When they are placed on the page, this point should coincide with the line of balance of the page.
6. Find balance using three groups
  - a. When a third group is used on the page, find the common center between two of them, and then balance them with the third, in this same manner. The values of the first two will be added together, of course, in establishing the proper proportion with the third group.
7. Consider the proper margins around the groups
  - a. If the upper group is wide, leaving narrow side margins, it should be placed closer to the top of the page than would be fitting if it were set in a narrower measure. As this group is raised or lowered to allow proper margins, the lower group will be raised or lowered proportionately.

8. Consider out-of-balance

8. Consider out-of-center balance
  - a. Balance matter on the page horizontally
    - (1) This style is occasionally used on cover pages

References :

1. Hague, C. W. Textbook of Printing Occupations  
"Elements of Design" - pages 81 to 84 inclusive.
2. Polk, Ralph W. The Practice of Printing  
"The Principle of Balance" - pages 179 to 182 inclusive.

Questions :

1. Using layout paper, indicate a page 6 x 9 inches, and locate the center of balance on the page. Find the center of balance on a page 4 x 6 inches; on one 5 x 7 $\frac{1}{2}$  inches.
2. Outline two groups with ratios of three to one (3 to 1), and find their center.
3. Outline two groups of equal size, and indicate the center of balance.
4. Outline a page 4 x 6 inches, and properly locate one group 8 x 5 picas.
5. Add a second group 5 x 3 picas, and show the proper balance.
6. Balance three groups bearing ratios of 4, 2, and 2, on a 6 x 9 page.

OPERATION SHEET

Specification : TO SECURE "PROPORTION" IN A LAYOUT FOR A DISPLAY JOB

Orientation

Definition : PROPORTION is a very important element in the design of printed matter. It applies to the shape of the page; margins between type forms and borders, and borders and the edge of the paper; and to the general placement of groups of type matter upon the page. Contrast and variety are necessary in printing, in order to lend interest to the design, but this touch of contrast, or irregularity, of elements of the form, should be applied in consideration of the principle of proportion, designated by one author as a "pleasing inequality of parts of an object". The common proportion used for book pages and various other commercial jobs is that of two to three, or where the length equals one and one-half times the width. This ratio of proportion gives the most pleasing effect and dates back to an early period in the history of printing and bookbinding. Most diversions from this proportion are to prevent excessive waste of paper which will not cut efficiently to the proper size and where other dimensions are needed to meet special requirements. Several schemes have been proposed for the standardization of sizes for paper stock, in which practically all papers would be based upon the ratio of two to three. This would prevent the carrying of odd sizes of stock and conserve cutting, but would also necessitate the revising of many established magazine and book sizes. The schemes have, therefore, not been adopted.

Tools and

Materials : Layout paper, pencil, rule or line gauge, and a type catalog.



Procedure :

1. Determine proportion in margins, according to following rules :
  - a. Margins inside and outside the border should be unequal. Equal margins are monotonous
  - b. Use the proportion of 2 to 3 which is generally accepted as most pleasing for such margins
  - c. Allow the wider space outside the border, since the border itself is really a part of the type design.
2. Determine best page sizes, according to the following rules:
  - a. Have page with its dimensions in the proportion of 2 to 3. Some common page sizes are 4 x 6, 5 x 7½, 6 x 9, and 9 x 12 inches. Or, if the sheet is wide, it is often 6 x 4, 8 x 5, 9 x 6, or 10½ x 7.
3. Determine proportion of margin and text, according to following data:
  - a. Have the area covered by the type form equal to one-half the total area of the page, or have the type and the combined margins each occupy an equal area of space.
  - b. When margins are too wide, the text loses in prominence and practicability. On the other hand, narrow margins give a crowded effect, and lessen the attractiveness and legibility.
4. Suggestion :
  - a. To find the proper allowance for margins, subtract the width of the body of the form from the width of the page; divide this by two, and then subtract the width of border from that. This leaves the total amount of white space on each side that is to be proportioned.

References :

1. Hague, C. W. Textbook of Printing Occupations  
"Elements of Design" - pages 76 to 81 inclusive.
2. Polk, Ralph W. The Practice of Printing  
"The Principle of Proportion" - pages 183 to 185 inclusive.



Questions :

1. What is the proper length of a page 6 inches wide?  
3 $\frac{1}{2}$  inches wide? 8 inches wide? 4 inches wide?
2. Make a layout properly arranging the margins for a form set 20 picas wide, to be printed on a 6 x 9 page, with a non-pareil border.
3. Make a layout for a form 18 picas wide, with non-pareil border, on a 4 x 6 page.
4. Make a layout for a form 21 picas wide, with pica border, on a 5 $\frac{1}{2}$  x 8 page.

OPERATION SHEET

Specification : TO SECURE "SHAPE HARMONY" IN A LAYOUT FOR A DISPLAY JOB

Orientation

Definition : SHAPE HARMONY implies a harmony of shapes in all the elements that make up the printed design. There should be a harmony of shapes between the styles of type used in the form; between the various groups on a page; and between the design as a whole and the sheet or page on which the design is to be printed.

Tools and

Materials : Layout paper, pencil, rule or line gauge, and a type catalog.

Procedure :

1. Make type fit page, according to following principles:
  - a. The general shape of the lettering used should be in harmony with the shape of the page.
  - b. Condensed types may be used on narrow pages, and extended types on wide pages with pleasing effect.
  - c. Wide types and ornaments are not suitable for long pages, and the condensed types do not appear well on wide pages.
  - d. Types of normal proportion have a wider use but they should be grouped to fit the page shape.
2. Make type harmonize according to lines or groups:
  - a. The grouping of the type matter should be in harmony with the shape of the page.
  - b. Short lines, and narrow groups of type, look best on long, narrow pages; wide groups should be arranged for wide pages.
3. Make types harmonize, according to following rules:
  - a. When selecting more than one type face for a piece of printing select those with a general shape characteristic. Condensed letters, may not be used with extended letters, and types of old style design are not suitable for use with the modern types. Letters of dainty, or ornamental form do not harmonize with plain bold letters of cruder design.
  - b. Do not mix lines of lower-case letters and of capitals, in one job. The capitals are formal and dignified, and the squared, even effect of

the lines do not harmonize with broken, and uneven lines of lower-case. Capitals are frequently used in formal work if the copy is brief and lower-case is used in work of less conventional nature. A consideration of the nature and purpose of the job will govern whether capitals or lower-case letters shall be used. The stiffness may be lessened by setting certain subordinate lines or words in *Italic*, and a pleasing variation may be secured, if wisely done.

4. Make type and border harmonize, according to following principles :
  - a. Choose borders that have shapes in common with the lettering.
  - b. Plain types must have plain borders, and more elaborate letters call for borders with units possessing shapes in common with them.
5. Square groups, observing the following rules :
  - a. In display work, it is sometimes desirable to square the groups by setting the lines to equal width.
  - b. Neatly squared groups are quite attractive when they come naturally, but they should not be forced
  - c. Wide letter-spacing of parts of the group, bad divisions of words, or awkward breaks in the thought of the wording, should not occur, in the attempt to make a squared effect.  
It is far more essential that the wording should be grouped in clear, logical order, and be easy to grasp and understand, than that it should assume some particular shape or arrangement.

References :

1. Hague, C. W. Textbook of Printing Occupations  
"Elements of Design" - pages 74 to 76 inclusive.
2. Polk, Ralph W. The Practice of Printing  
"The Principle of Shape Harmony" - pages 186 to 189 inclusive.

Questions :

1. Explain what is meant by shape harmony.
2. What considerations govern the selection of a type face for a job?
3. What can you say of squared groups?



OPERATION SHEET

Specification : TO SECURE "TONE HARMONY" IN A LAYOUT FOR  
A DISPLAY JOB

Orientation

Definition : TONE HARMONY in printing is the density or strength of color made by the impression of the form. Light-faced types produce a light gray tone on the page, and bold types produce a dense black tone. Harmony of tone among the elements of the form is one of the essentials of good typography.

Tools and

Materials : Layout paper, pencil, rule or line gauge, and a type catalog.

Procedure :

1. Obtain tone harmony by applying the following principles:
  - a. Tone harmony is had by the selection of borders, ornaments, or rules that will produce the same weight of color, or tone, as that of the type used. If the type is of an even tone, then other materials used will be composed of strokes, or units, of the same tone.
  - b. If there is contrast in the light and heavy elements of the lettering, the border may contain elements that match each of these tones, in which the heavy lines of the border harmonize with the heavy elements of the letters, and the lighter lines with the light elements. When the body of a form consists of both display and body type, one element of the border may match the bolder display lines, and another the light gray tone of the body type.
  - c. If it is desired to use a certain ornament or border which is too bold for the type, it may be used by printing it in a second color, or a tint, which will thereby lighten its tone.
2. Obtain contrast in tones according to the following rules :
  - a. This method of display requires some skill in designing, and, for the beginner, the even tones on the page are more likely to be successful. However, after a good deal of experience has been had you may add much interest and color to the job by contrast such as a light gray with a black or dark color.



References :

1. Hague, C. W. Textbook of Printing Occupations  
"Elements of Design" - pages 84 to 95 inclusive.
2. Polk, Ralph W. The Practice of Printing  
"The Principle of Tone Harmony" - pages 190 to 192  
inclusive.

Questions :

1. What is meant by tone harmony?
2. If type consists of contrasted light and heavy elements, what kind of a border is best?
3. How would you choose a border for a form consisting of display lines and body type?
4. How may a border or ornament heavier than the type be used consistently on a page?
5. What can you say about contrast in tones?

OPERATION SHEET

Specification : TO SECURE PROPER USE OF "DECORATION" IN A LAYOUT FOR A DISPLAY JOB

Orientation

Definition : The purpose of type is "to get itself read!" The purpose of DECORATION is to make the type matter more attractive, to assist it in getting read, and to create the most favorable impression on the reader. Decoration must never exist for itself. It should be secondary to the purpose or mission of the printed matter it is to decorate. It would be a failure in any case if it did not support or strengthen the message, or if it should in any way overshadow the type or the text. "Art is not a thing separate and apart; art is merely the best way of doing a thing."

Tools and

Materials : Layout paper, pencil, rule or line gauge, and a type catalog.

Procedure :

1. Make the decoration pass the test of fitness
  - a. Before deciding upon the use of decoration, it is well to ask the following questions:
    - (1) Does the work call for, or permit of, decoration?
    - (2) Will it enhance, or strengthen, the text matter?
    - (3) Will the decorative units considered be particularly fitting?
  - b. Some classes of printing do not permit of any decoration but most jobs will take a moderate amount, if judiciously applied. A small per cent of printed work may be rather ornamental. Decoration depends upon the subject matter.
  - c. The more formal printing does not admit of elaborate decoration.
    - (1) On a musical program one may use ornaments suggestive of the text.
  - d. In religious printing, such decorative material may be used as will reflect the spirit of the message.
    - (1) The Maltese and Roman crosses, ornaments of a Gothic character, and mural decorations, are very appropriate for Church work. Missal initials are always permissible in this work.

- e. It is safe practice, if there is any doubt as to whether a spot of decoration is desirable or not, to leave it out.
- 2. Make decoration harmonize with type, according to following :
  - a. Must harmonize with the type in shape and tone
  - b. Decoration must create the same general effect
- 3. See that the ornaments are conventionalized
  - a. Ornaments must appear to lie flat on the surface of the paper.
  - b. Have no suggestion of perspective, or of the finer details of light and shade.
- 4. Suggestions on choosing an ornament
  - a. Be sure that one is needed, and pick one thoughtfully
  - b. See that ornament adds beauty and effectiveness to the design
  - c. In choosing an ornament, measure according to:
    - (1) Is it in keeping with the subject matter?
    - (2) Is it a proper size?
    - (3) Will it harmonize in tone with other units?
    - (4) Is its shape satisfactory?
    - (5) Will the job as a whole be definitely improved

References :

- 1. Hague, C. W. Textbook of Printing Occupations  
"Elements of Design" - pages 84 to 95 inclusive.
- 2. Polk, Ralph W. The Practice of Printing  
"The Use of Decoration in Printing" - pages 193 to 196 inclusive.

Questions :

- 1. What is the purpose of decoration on the printed page?
- 2. What are some of the considerations of fitness in the use of decoration?
- 3. How may the elements of decoration harmonize with the type used?
- 4. Discuss pictorial illustrations and conventionalized ornaments.
- 5. What are some of the considerations in the choice of an ornament?



JOB SHEET

Specification : TO COMPOSE A "SINGLE COLUMN AD" WITH BORDER

Orientation

Definition : The purpose of an advertisement is to attract the attention of the reader to its message, to convince him of the need or the desirability of obtaining the merchandize or service offered, and to induce him to take action in the matter. The ad must therefore be (1) attractive or inviting to the eye, (2) easy to read, and (3) it must exert a favorable influence on the reader, in order to accomplish this. Advertising space in a newspaper or magazine is sold by the column inch, or the unit rate is an ad one column wide by one inch high. This requires that the copy furnished by the advertiser be set in a definite space. The sizes of type used will be determined by the given space, and the selection should be as nearly representative of the goods advertised as it is possible to get.

Tools and

Materials : Composing stick, selection of ad type, spacing materials, borders and decorations, galley, rule or line gauge, proof press.

Procedure :

1. Make a layout for ad with given data
  - a. Draw a rectangle the same size as the ad to be composed and within this draw layout for ad using given data. Apply the principles concerning elements of design in selecting type faces and sizes, borders and ornaments.
    - (1) Refer to operation sheets on "Elements of Design".
2. Make a skeleton of the job
  - a. Make a skeleton of the ad by placing on a galley with the top and left borders and the marginal spacing in their correct places.
3. Compose and complete assembling of ad
  - a. To the proper width, fit the type within the skeleton
  - b. Assemble each line as it is set so that the space that remains may be checked for spacing and correct sizes of type.

4. Complete border set-up
  - a. Close in the marginal space and border
5. Tie and proof the form for corrections and revisions
  - a. Refer to operation sheets
6. Check up on the size of composed ad and its justification
  - a. Test to see if the form will fit the given space in the paper
  - b. Test the form for "lift" to make sure of proper justification

Questions :

1. What is the purpose of advertising?
2. How do most newspapers sell their advertising space?
3. Is it necessary to use exact wording of ad as given by advertiser? Why?
4. How should you determine the selection of type?
5. Why is the justification so important in an ad?

INFORMATION SHEET

Specification : RELATED INFORMATION - PRINTING INKS : COM-  
POSITION, DIFFERENT KINDS, CARE OF INKS

Orientation : (a) Although the manufacture of PRINTING INKS is not a part of the printing trade, a slight knowledge will help immensely in the proper use of inks. Many printers know which inks to use on certain jobs, but do not know why they do so. Others use the same inks on all jobs and wonder why they do not get results. Of course the first case is much the better, but the progressive printer wants to understand why he does things so that he can act intelligently in case of trouble. There is as much difference between inks as there is between the papers on which they are used and, unless the right kind and color of ink is used, the job never looks well. Much wasted time in trying to get a good impression can also be saved if the pressman is able to trace the trouble in the ink.

(b) The manufacture of ink is quite a complicated matter and involves many scientific processes which are not exposed to the public. The general ingredients, however, and the way in which they are mixed are all that are necessary for a knowledge of their uses. In the old days printers mixed their own inks on a slab with dry color and varnish and could make them crudely to suit themselves, but today all we have to do is to buy and use inks and it behooves us to use them right.

(c) Printing inks are supplied to the printer in barrells, pails, cans, and tubes. Most of the inks that are used in job printing are put up in small cans and collapsible tubes.

Related Information on Printing Inks :

1. Composition of printing inks :

- a. Printing inks are mainly composed of color pigments and varnish ground together in proper relation to one another to suit the various grades of work for which they are intended. The pigments furnish the color, and the varnish the binder which holds the color to the paper.



Pigment in black ink is lampblack, produced by the burning of fats or oils in such a manner as to secure a heavy deposit of soot, or carbon. Pigments for the various colors are obtained from various objects in the mineral, vegetable, and animal kingdoms. The varnishes used are principally linseed oil, or rosin oil. The former is used in the better grades of ink. It has the property of absorbing oxygen, and when spread out in a thin film it forms a very smooth, hard coating which, after drying a few hours, will not rub off. The rosin varnishes, which do not dry so rapidly, are used in the cheaper grades of ink. They are intended for printing on softer paper which will easily absorb the ink.

- b. Each ink manufacturer has his own secret formulas for the making of different inks, and for various purposes he adds to the pigment and varnish other ingredients, such as tallow, soap, castor oil, and beeswax.

## 2. Different kinds of inks

- a. There are many kinds, or classes, of printing inks, differing with each other in composition in accordance with the particular service each is made to render. In ordinary letter-press printing we have news, book or cylinder, job, bond, half-tone, and cover inks.
- b. News ink is a cheap grade of ink for printing on rough, uncoated wood-fiber paper, such as news print. It has no drying properties, and it "sets" only by absorption into the paper. It is not suitable for the better classes of printing.
- c. Inks for cylinder presswork vary in their properties in accordance with the nature of the paper stock upon which they are to be printed. For the harder finishes of paper, a mixture that will dry more rapidly is used, as there will be less of absorption into the stock. Cylinder inks, generally, are made with a lighter, finer body that is calculated to give good results on jobs that pass through the press rapidly.
- d. Job inks are made for the general lines of work on the platen presses. They are heavy and full of color, and are designed for best results with flat impressions of type on the paper. One class known as bond inks, is particularly suitable for printing on bonds, ledgers, and other classes of writing papers, that do not permit penetration of ink.

- e. Halftone inks are used principally on the hard, smooth surfaced papers, such as coated and enameled book stock. Halftone ink is of a high grade. It is soft and flowing, yet it has the property of drying quickly on the sheet, so that stock may be handled without undue smudging or off-setting.
- f. Cover inks are made up in stiff varnish, and are very strong in color. As the name implies, they are for printing on cover stock where heavy covering capacity is essential. Because of the heavy body of cover ink, it cannot be used successfully in the printing of very small type, or of cuts with fine lines, as the ink will fill the counters.

3. Care of inks :

- a. If a can of ink is left uncovered, a thick scum will form over the top of it, and there will be a needless waste of ink. For this reason, the lid should always be replaced at once whenever the can is used. The same rule should apply to inks in tubes. When a can of ink is placed on the shelf for an indefinite period, an oiled paper should be drawn across the top of the ink can and the cap pressed down over it, to further seal it. Some pressmen pour a film of oil over the top of the ink, or fill the can up with water, to prevent deterioration, and scumming.
- b. In removing ink from the can, do not dig deeply into the can, but take it from the top without disturbing the lower mass of ink. Always leave the surface smooth, so that air cannot penetrate it. Do not leave the ink-knife in the ink.

Questions :

- 1. What are the two main ingredients in ink?
- 2. What can you tell about news ink?
- 3..What kind of ink is suitable to general job press work?
- 4. What can you say about the care of inks?
- 5. How should ink be removed from the can?

ASSIGNMENT SHEET

Specification : STUDY THE USE OF "INITIAL LETTERS" IN PRINTING

Orientation : INITIAL LETTERS are frequently used in printing, at the beginnings of new groups of text matter. In fact, this practice is older than the art of printing itself. For some time after the invention of printing, the early craftsman did not use printed initials. They attempted to make their books as nearly as possible like the manuscript books that preceded them, and they followed their style in the matter of initials. They left spaces in the printed text, to be painted in by an artist. Many of these initials were richly finished, in burnished gold and color. A small index-letter, showing what the letter was to be, was generally written or printed in the space before the work was given over to the illuminator. Some wood block initials came to be used as book printing progressed, and finally metal blocks were made to print with the type matter. These are the forerunners of our modern initial letters. When carefully chosen, initials add very greatly to the appearance of the page, lending variety and interest, while their theoretical purpose is to call attention to where the reading matter begins. They must be selected and used in accordance with the general principles of good typography, namely, fitness, (or appropriateness), proportion, balance, shape harmony, and tone harmony.

Questions :

1. What is the purpose of the initial letter in printing?
2. Tell what you can about the origin and development of the initial letter.
3. What are some of the typographic considerations in the use of initials?
4. What is the general practice with regard to the capitalization of words?



5. Tell what you can concerning the placing of initials in type matter.
6. What are some letters that present special problems in spacing?
7. If quotation marks are to appear with an initial, how should they be set?

References :

1. Hague, C. W. Textbook of Printing Occupations  
"Initial Letters" - pages 58 to 63 inclusive.
2. Polk, Ralph W. The Practice of Printing  
"The Use of Initial Letters" - pages 197 to 202 inclusive.

INFORMATION SHEET

Specification : OCCUPATIONAL INFORMATION PERTAINING TO  
THE PRINTING INDUSTRY

Orientation : To every student of printing comes the question of the opportunity of making a living in the field of printing itself or one of the allied trades. Since the invention of printing movable types by Gutenberg this industry has grown to become the sixth largest industry with respect to the value of its product, in the country. Printing has had a great influence upon civilization. Without it we would be much behind our present day advancement. A brief survey should be of interest to all.

THE GREAT INDUSTRY OF PRINTING

1. Printing ranks sixth among industries :  
The census reports rank printing as the sixth industry of this country with respect to the value of its product, although in some other respects it is entitled to be classed as the third great industry, and in some, even as the second in rank. With respect to the value of their gross products, the meat industry ranks first; foundry and machine shops, second; and printing and publishing, third. When net products are considered, foundry and machine shops rank first, and printing and its allied trades second. In total capitalization, foundry and machine shops lead; lumber, steel, and printing tie for second place. Printing ranks third in the number of employees, and second in the wages paid its workmen. There are about 35,000 printing establishments in the country, representing a capital investment of over \$1,000,000,000. These plants employ more than 450,000 printers, whose total annual salaries are approximately \$560, 000,000.
2. The allied trades :  
Printing, with its allied trades, includes such lines of work as job and catalog printing, newspaper, magazine, and book publishing, bookbinding and blank book making, photo-engraving (plate-making), lithographing and offset processes, steel and copperplate engraving, type-founding, paper-making, the manufacture of inks, and commercial design and advertising service.

3. The printing trade :

The printing trade proper, which we shall consider particularly in this study, comprises the activities that are carried on in the regular departments of the modern commercial printing plant. The scope of the work done in different plants varies considerably, but all of them include activities which may come under the three main heads, or departments, of (a) composition, (b) presswork, and (c) stockroom and bindery. In the smaller shops these three departments may exist in simple form, but as establishments become larger and more fully equipped, we find increased subdivisions of these activities into a larger number of departments.

In the composing department, the jobs of printing are planned or "laid out", the type is set up, corrected, made up into forms in accordance with the individual specifications, and locked up for the presses. The type may be set by hand, or partly by hand and partly by machine, and therefore the work on the linotype, monotype, and all typesetting machines, is considered as in this department.

In the pressroom type forms are placed on the presses, made ready, and printed. This work may be done on job presses, or on cylinder presses, and the sheets may be fed into the presses by hand, or by mechanical feeders.

Paper stock is received and stored in the stockroom, and is cut to proper size, as needed, for each job. After the printing has been completed, such operations as folding, stitching, tabbing, perforating, trimming, etc., are carried on in this department (or in the bindery if it is maintained as a separate division). Packing and shipping ordinarily are functions of this department.

In small plants, a printer may be an all-around workman, setting up jobs, cutting paper stock, feeding presses, and in short doing any of the necessary work of the shop. In the larger plants, the lines between the departments are more definitely drawn, and men serve in narrower capacities, as specialists. One may be a compositor, another a stoneman, a linotype operator, or a specialist in any one of the various operations of the printing trade.

4. Broad training necessary :

In the earlier days of printing, it was common for the apprentice to receive an all-around training, but in this period of specialization and factory production methods, he is fortunate if he obtains



a good working knowledge of one process, or at least of one department, in connection with his apprenticeship work.

However, every printer should develop a broad knowledge of the fundamental trade processes, regardless of the department in which he works. The compositor needs to know the problems of the pressman so that he may anticipate them as he prepares the forms for the presses; the pressman needs to know the processes of the composing room, so that he can get the best results from the type forms, and can work in close cooperation with the composing department; both must have a knowledge of paper, and the problems of the stockroom and bindery. Skilled workmen in every department must have an understanding of the entire problem of producing printed matter, if they would be efficient printers.

If one does not obtain this knowledge through his regular experience at his work, then he must make up his deficiencies by extra study and investigation.

5. Exceptional opportunities in printing :

There is great need in the industry today for well-trained workmen. There is a magnificent array of machinery, type, and all of the modern appliances of the trade, but a shortage of skilled, competent printers, who can produce work of quality.

The demand for the better grades of printed matter is constantly increasing. The modern business man is asking for quality printing, and he will not accept jobs that are not up to the standard. Employing printers, also, are constantly raising their standards, and improving their plants.

There never was a more opportune time for young men of ability to prepare for the great printing industry, and the prospects for capable, well trained men are especially good.

Questions :

1. Name some of the allied printing industries.
2. How many printers are there in the United States?
3. What are the 3 common departments of a printshop?
4. What are some of the activities of a composing room?
5. Tell what you can about the pressroom.
6. Which department has to do with the handling of paper?

## SUMMARY FOR UNIT INSTRUCTION SHEETS

An instruction sheet is a teaching device; an attempt to put down in writing and by means of illustrations, the information necessary to do a job, to perform an operation, or simply to give information concerning a particular subject.

It is not intended that the instruction sheet should displace the instructor. Demonstrations will continue to be necessary, but the instruction sheets will supplement the demonstrations and will be a great aid to those students who may be ahead or behind the average of the class. They will also assist in cases of absences from classes.

It is not intended that every printing teacher should be an expert instruction sheet writer, but it is believed that each and every teacher should have a thorough understanding of the essential elements of good instruction sheets and of the proper technique in writing such sheets so as to be more efficient in the selection and use of those sheets already on the market. Such proficiency will also permit the instructor to supplement the commercial materials with instruction sheets particularly suited to his own environment.

In using these instruction sheets with this or any other course of study, it is believed that the instructor should demonstrate a few of the simpler operations at the beginning of the course. His object should be to get each

member of the class started on the first job as soon as possible. This can be done most rapidly by first demonstrating how to set type. This involves the beginning fundamentals such as standing at the case correctly, holding the composing-stick correctly, etc. New operations can then be demonstrated as soon as it is important to do so.

At first an operation schedule of the job assigned should be given to each student. It should contain all the operations involved in the job, preferably listed in the proper sequence. References should be given to the instruction sheets that explain the new operations and items of information.

Later, after the student has become familiar with the essential operations in the ordinary jobs, he should be required to write his own operation schedule in order that he may gain experience in planning his work. His schedule should be checked by the instructor in order to avoid discouraging mistakes. Such a procedure will provide the greatest flexibility for the teaching program by way of assisting individual progress to keep pace with individual ability. It will also bring out the maximum of initiative and planning ability necessary to the continued success of those who care to advance beyond the stage of unthinkingly following plans of procedure prepared by others.



CHAPTER IV.  
OCCUPATIONAL INFORMATION  
FOR  
PROSPECTIVE PRINTERS  
OR  
PRINTING TEACHERS

## INTRODUCTION TO OCCUPATIONAL INFORMATION

Our modern educational system does not make sufficient provision for individual differences. Wider diversification of courses, prevocational experiences, and education for individual needs are essential. Educational and vocational guidance must become an important function of the school system.

Modern industry is complicated and highly specialized, and demands that waste be reduced and efficiency increased. While improved methods and machinery have helped to accomplish these ends, attention must be paid to the human factor--the workers. They must be interested in their work, specially qualified, and properly trained for it. These functions are the chief objectives of any worthwhile guidance program.

Progressive educators favor vocational guidance. Many writers have called attention to the readjustments necessary in our present system of education, and in our plan of industrial management and selection for employment, if we are to consider the welfare of the worker. Reports of various commissions and of educational and industrial surveys in a number of states have shown clearly that, during the interval between the time when boys and girls leave school and the day on which they become established workers in a given field of activity, much valuable time is wasted through drifting from one job to

another, and in aimless employment, thru lack of definite plans for the future and thru misconceptions of the fundamental principles in the selection of a calling.

Practical education for efficient living and competency at work is an important present need. Formerly, with the simplicity of industry, there was little need for guidance; the complexity of modern industry and modern life, however, demands that the great majority of youth shall be guided into and trained for skilled and semi-skilled occupations.

Guidance is concerned with counseling the individual in the choice of a career, assisting him to find out his aptitudes and limitations, awakening in him thoughts of the future, showing him opportunities, directing and coordinating his efforts, and supervising his entrance into industry. Guidance is not a remedy or medicine for all ills. It employs only scientific methods. Astrology, phrenology, palmistry, character analysis, and other unreliable methods and plans should be avoided. Successful vocational guidance leads to self-guidance and culminates in placement. Under present conditions it should precede, accompany, and follow vocational education.

It is important that counselors, school administrators, personnel workers, and others interested in the welfare of boys and girls should ascertain what knowledge the latter have of vocational opportunities, why they with-



draw from school prematurely, what work they intend to do after leaving school, and in what occupations they are actually employed after an employment certificate has been issued to them. Investigations generally disclose that the pupils' stocks of vocational ideas are very meager and that it is the business of the school to supply the needed information concerning occupations and occupational conditions.

A system of accounting should be kept of all the children in all our schools--the causes of their withdrawal, and what becomes of them after they leave school to go to work. Investigations disclose the fact that many children leave school because of short-comings in the school, and that they could be retained for a longer period providing their needs were studied and satisfied. Such children are ignorant of the world of work that they must enter and are especially in need of guidance.

Studies of what children do after they leave school show that in large numbers they become errand boys, messengers, or are employed at unskilled work. High school graduates prefer commercial occupations while those who leave elementary school enter the trades. Usually there is little thought given to the choice of an occupation. There is a tendency to surround the entrance of minors into industry with restrictive legislation, to increase the compulsory school attendance age, and to supervise

employed boys and girls. Whether juvenile jobs possess educative value is a problem that should be studied.

Cases that come to the attention of the vocational counselor should be carefully recorded and studied so that a body of principles can be made available for future reference. Such cases will serve as precedents so that the truths thus discovered will aid in the solution of similar problems. The importance of careful observation, painstaking diagnosis, and accurate reasoning on the part of the counselor, cannot be overestimated.

Vocational counselors have a serious responsibility and must be specially qualified and trained for their work. They must not be teachers or others who, having displayed some interest in these problems but with little or no fitness or training for them, are partially relieved from classroom duty for part-time counseling. If the work is to be done well, it must not be a makeshift procedure. A number of states have already established qualifications and set up training programs. There is general agreement as to the courses which shall comprise such training.

There are twelve strategic periods during which the boy and the girl need guidance and counsel in building a life-career. They must be aided to plan, prepare, and persevere in their chosen vocation. Setting up a life goal and developing a life program necessitate painstaking attention to details.

A comprehensive plan for guidance will include subjective and objective methods of self-exploration as well as the study of occupations. Pupils will be enabled to discover their aptitudes, will be directed into congenial employment, and will be counseled concerning the essentials of success. Occupational information interestingly and accurately presented must be made available to teachers, counselors, and pupils.

Self-exploration or personal inventory by means of questionnaires is designed to aid the individual to study himself. Care must be exercised in compiling the questionnaires and interpreting the answers. These forms usually include questions about personality, education, and avocations.

The study of aptitudes is of the greatest importance to the vocational counselor. National, family, and individual traits must be taken into consideration in any sound plan for guidance.

Psychological, trade, and guidance tests can be used as aids in discovering abilities. These tests, however, have their limitations, and should not be regarded as absolute or final. There appears to be a correlation between intelligence and occupation. Distinction should be made between tests that are scientific and those that are unsound. Bias, personal opinion, and hearsay should be replaced by objective testing and scientific selection.



Besides aiding individuals to study their interests and abilities it is important to supply them with accurate information concerning opportunities, entrance and promotion requirements, necessary preparation, and working conditions. This then is the purpose of the following chapter which the author believes to be a present need.

OCCUPATIONAL INFORMATION

(Key to organization of units)

<u>Symbol</u>	<u>Unit</u>	<u>Example</u>
Capitals <u>in quotes</u>	Teaching unit	"A" - The Composi-
Roman numerals	Major topics	II. The Impor-(etc
Capitals	Minor topics	A. Invented (etc.
Arabic numerals	Related points	1. Early records,

Unit "A" - The Composer

I. The Invention of Printing

- A. Invented in Europe during middle of 15th century
  - 1. Johannes Gutenberg of Germany, inventor
- B. Immediate steps leading to invention of printing
  - 1. Early records chiseled on stone
  - 2. Papyrus, a paper made from reeds of Nile River
  - 3. Parchment made from sheepskin
  - 4. Hand written books
  - 5. Image prints, made from carvings on blocks of wood (wood-block books)
  - 6. Reading matter carved on blocks of wood
- C. Next step was to make separate letters
  - 1. Wood first used, followed by metal
  - 2. First carved by hand, later by molding
- D. Machine composition - 19th century
  - 1. Linotype and monotype-typecasting machines
  - 2. A skilled man could set about 3000 letters in an hour
  - 3. A linotype operator can set 10,000 letters in an hour
  - 4. Power driven machinery has resulted in speeding-up of processes, economy in time and money, and better products

II. The Importance of Printing

- A. Aided in giving a universal reading and writing knowledge
- B. People in one part of the world can make themselves understood by others
- C. With this invention we are able to make permanent records

III. Divisions of the Printing Industry

- A. Types of Shops
  - 1. Periodical or Magazine Shop
  - 2. Job Shop, the general shop of the industry
  - 3. Newspaper shop
  - 4. Book Shop

B. Divisions in the Shops

1. Composing or "setting up" the type and making up forms
2. Presswork
3. Binding, assembling and sewing the printed product

IV. The Composing Room

A. The Jobs in the Composing Room

1. Hand compositors
2. Linotype operators
3. Monotype-keyboard operators
4. Monotype-caster operators
5. Proofreaders
6. Layout men
7. Imposition men or stonemen

B. The Operations Performed - Copy travel

1. Copy-cutter, divides copy
2. Linotype operators, machine copy
2. Hand compositors, headings which are not for machine
4. Assembling-bank men, gather together copy from above
5. Apprentice to "pull" proofs
6. Proofreaders, compare with original copy for errors
7. Correcting bank, where corrections are made
8. Make-up bank, placing into page forms with ads
9. Copy-holders, who hold original copy

C. The Tools and Materials Used

1. Composing stick, in which type is set and justified
2. Galley, a metal tray upon which type is set or placed after removing from composing stick
3. Tweezers, with which to lift individual letters
4. Line gage, to make measurements
5. Composing rules
6. Make-up rule
7. Planer, smooth block of hard wood, used to level type
8. Mallet, used by stoneman to plane down forms
9. Chase, in which forms are locked
10. Furniture, which is used to lock up forms in chase
11. Quoins, metal wedges for form lockup
12. Quoin key, to make quoins solid against furniture
13. Lead and rule cutter, cut strips of lead or rule to length
14. Mitering machine, used to bevel strips of border
15. Trimmer, trimming printing plates
16. Proof press, upon which proofs are taken
17. Linotype and Monotype, typecasting machines



18. Ink, paper, type, and spacing materials

V. Entrance to the Trade

A. Education and Training Required

1. Eighth grade education required, high school preferred
2. Thorough knowledge of English
3. Good mastery of Mathematics
4. A good general education helpful because of contacts with a good many fields
5. Technical training and education
  - a. Learn typesetting, proofing, process of imposition
  - b. Knowledge of design, lettering, color harmony, interpreting sketches, layouts, and diagrams

B. Age of Entrance

1. At least 17 in order to accept responsibilities of the work, and to understand technical details

C. Physical and Personal Requirements

1. Good eyesight
2. Use of both hands
3. Fingers should be nimble
4. Accurate
5. Mentally alert
6. Patient
7. Systematic
8. Neat
9. Good memory
10. Artistic sense
11. Initiative

D. Methods of Entrance

1. Enter as helper and learn trade by assisting others
2. Apprentice, or a learner who is under contract
3. Errand boys at earlier age

VI. The Working Conditions

A. Operation from 44 to 48 hours per week (present tendency is to greatly shorten working hours)

1. Job shops close on Saturday afternoons
2. Night work in newspaper plants

B. Wages of apprentices

1. \$12.50 to \$15 per week at beginning (normal times)

C. Employment steady all year round, as a rule

D. Little danger about shop because of guarded machinery

1. Proofreader may suffer some eyestrain
2. Some nervous strain on compositors

E. Modern shops are well equipped for comfort of workmen

## VII. Promotional Possibilities

### A. The Promotional Steps

1. Errand boy
2. Apprentice
3. Journeyman
4. Assistant foreman or head of departments
5. Foreman of composing room
6. Superintendent of shop
7. Owner of shop

## VIII. The Value of Education

- A. \*Due to the increasing competition for positions in industry, it is more than ever necessary to round out one's practical experience with some general and technical education, in order to gain advancement.---
- B. Technical Education of the kind which can be secured at the vocational or trade school and the technical high school is valuable to the prospective compositor because it acquaints him with the work of the composing room and teaches him the principles upon which that work is based.---
- C. General Education is of value both in business and out of it; those who possess such a training are broadened by it with the result that they have a wider understanding of the problems of their customers.--
- D. A democracy like ours is successful only when all the people take some interest in its affairs.

\* Cooley, Rogers, Bellman, My Life Work Printing and Servicing Trades.

## Unit "B" - The Pressman

### I. The Development of the Printing Press

- A. First method - squeezing or pressing one sheet at a time
  1. First manufactured out of wood, later iron
- B. Power methods
  1. Hand
  2. Steam
  3. Electric
- C. Today both flat and curved forms are used
- D. Types
  1. Platen Press, flat bed to hold form, paper on platen
  2. Cylinder Press, flat bed, impression from cylinder
  3. Rotary Press, two cylinders, one carrying form, other paper

E. Three general processes of printing

1. Relief printing
2. Planographic, parts to be printed on level as face of form
3. Intaglio, parts to be printed below surface of plate

II. Types of Pressrooms and Presses

A. Platen presses-job shops

B. Cylinder presses-job, book, and magazine printing

1. Single-revolution presses, cylinder revolves once for each impression
2. Double-revolution presses, cylinder must revolve twice to make each impression
3. Flat-bed web presses, bed remains stationary while cylinder travels back and forth over it. This prints on a roll or web of paper
4. Job-cylinder or baby-cylinder press, operating at a high rate of speed, for job-printing shops

C. Rotary presses-book and job-printing plants, in the pressrooms which print magazines and other periodicals, and in newspaper printing plants

1. Sheet-fed press, printing from flat sheets of paper
2. Web-fed presses, two types, one used in printing books and magazines, the other for newspaper work

III. The Importance of the Pressroom

A. The appearance of a completed job depends to a great extent upon the work of the pressroom employees

1. Even impression of forms
2. Margins accurately located
3. Proper mixing of inks
4. Even application of inks

IV. The Work of the Pressroom

A. The jobs in the pressroom

1. Press feeders
2. Pressmen

B. Operations Performed

1. Platen pressmen
  - a. Inking press
  - b. Placing form in bed of press
  - c. Placing packing on platen
  - d. Make-ready
  - e. Overlay and underlay
2. Platen-press feeder, assists pressman in duties
3. Cylinder pressman
  - a. Inking press
  - b. Places and locks form
  - c. Make-ready



4. Cylinder-press feeder, feeds the sheets of paper
5. Rotary pressman
  - a. Remove plates used on previous runs
  - b. Wash rollers
  - c. Clean all parts of press
  - d. Get rolls of paper ready
  - e. They lead web back through various rollers
  - f. Plates locked up and placed in position
6. Rotary web-pressmen, each in charge of several units

## V. Entrance to the Trade

### A. Education and Training Required

1. Minimum general education requirements
  - a. Arithmetic, English, Art, Chemistry, Physics
2. Technical training
  - a. Study of the names of the presses, sizes, etc.
  - b. Harmony of color, mixing of colors
  - c. Qualities of paper
  - d. Care of machinery
3. Practical training necessary
  - a. Elements of make-ready
  - b. Feeding presses properly
  - c. Understanding of work of composing room

### B. The Age of Entrance

1. The age of 18 is required to satisfactorily meet the assigned responsibilities and details of the work

### C. Physical and Personal Requirements

1. Good general health
  - a. Must have use of limbs
  - b. Must have good eyesight
  - c. Good strength to lift forms
2. Personal qualities
  - a. Accurate
  - b. Dexterous with hands
  - c. Alert
  - d. Patient
  - e. Willing to work hard
  - f. Artistic sense
  - g. Liking for machine work

### D. Methods of Entrance

1. Apprenticeship system
  - a. Errand boys or flyboys
  - b. Period - 5 years as a rule
    - (1) Assists the pressman
    - (2) Learns fundamentals of the trade
2. To become a journeyman depends upon ability to observe and learn technical experience
3. The all-around pressman is the most valuable type to the employer

VI. The Working Conditions

- A. Weekly working hours - 44 and 48
  - 1. Overtime work is requested for rush jobs
- B. Wages
  - 1. Minimum wage scale with range for efficient work
  - 2. Not seasonal
- C. Most of the hazards of printshops have been eliminated
  - 1. Some nervous strain from noise of presses

VII. Promotional Possibilities

- A. The Promotional Steps
  - 1. An apprentice or flyboy
  - 2. A journeyman
  - 3. In charge of a unit of the big press
  - 4. Assistant foreman
  - 5. Foreman

VIII. The Value of Education

- A. Technical training and general education necessary for success
  - 1. Ability to get along with people in and out of trade
  - 2. Ability to care and operate machinery
  - 3. Know how to manage shop from business point of view
  - 4. Know technical details
  - 5. Ability to direct work
  - 6. Ability to teach others
  - 7. To keep up with the latest developments
  - 8. A knowledge of cost accounting, business English, and letter-writing, mathematics, and office management are essential
- B. A study of these subjects can be made either in part-time, full-time or night schools, or by correspondence
- C. Other essentials
  - 1. Intelligent and constructive part in community affairs
  - 2. Understand community problems and help in solving
  - 3. Know something about good health, in order to practice correct habits of eating, sleeping, working, etc.
  - 4. Ability to enjoy leisure time, by reading good literature, by the proper physical recreation, and by selecting good entertainment.

## Unit "C" - Lithographic Printing

### I. The Development of Lithography

A. "Lithography is the art of putting writing or designs on stone with a greasy material, and of printing impressions of the writing or the designs on paper or any other substance."

1. Today zinc and aluminum are used instead of stone
2. Invented in 1796 by Alois Senefelder, Munich, Germany

B. This is a branch of the printing industry which is expanding to such an extent that it is assured of a good future. Labels of all kinds, posters, letter-heads, advertising novelties, colored postcards, magazine covers, and many other printed products are now produced by the lithographic method.

### II. The Organization of a Lithographing Plant

#### A. The Departments

- |              |                              |
|--------------|------------------------------|
| 1. Designing | 5. Transferring              |
| 2. Engraving | 6. Pressroom                 |
| 3. Art       | 7. Cutting, sorting, packing |
| 4. Proofing  | 8. Plate preparing           |

### III. The Workers in a Lithographing Plant

#### A. Designing Department

1. Commercial designers
2. Art designers

#### B. Engraving Department

1. Engravers on specially prepared limestone

#### C. Art Department

1. Plate artists

#### D. Proofing Department

1. Proofers

#### E. Transferring Department

1. Transferrers

#### F. Pressroom

1. Pressmen and pressfeeders

### IV. The Work in the Lithographing Plant

#### A. The Operations Performed

1. Commercial Designer
  - a. Lettering the designs and designing letter-heads
2. Art Designer
  - a. Draws and colors the pictures and the figures that appear on magazine covers, posters, and ads
3. Stone Engraver
  - a. Makes a tracing



4. Plate artist
    - a. Makes a different plate for each color
  5. Proofer
    - a. Makes proofs of every plate and determines colors
  - B. Types of Presses Used
    1. Offset press, used with zinc-plate method
- V. Entrance to the Lithographic Trades
- A. Education and Training Required
    1. One or two years of high school education required
    2. Technical training asked only of those who become artists or engravers
    3. Special art courses
    4. Broad general education
  - B. Age of Entrance
    1. Not under 16; older people are generally more capable of accepting responsibility
  - C. Physical and Personal Requirements
    1. Sound, healthy body and full use of both hands
    2. Artist
      - a. Ability to concentrate
      - b. Ability to work out original ideas
      - c. Must not be nervous
      - d. Liking for work in quiet surroundings
    3. Proofer
      - a. Good eye for color
      - b. Ability to mix inks for correct color combinations
    4. Transferman
      - a. Quiet disposition
      - b. Ability to do detail work
      - c. Must be very accurate
    5. Pressman
      - a. Mechanically inclined
      - b. Thorough knowledge of colors
    6. In general they must all be punctual, honest, and industrious
  - D. Method of Entrance
    1. As an indentured apprentice - 4 years
      - a. Under contract agreement with employer
    2. Attends vocational school while learning trade
- VI. The Working Conditions
- A. No dangers in this industry, no unusual health hazards
  - B. Hours of work - 48 per week - half day on Saturday  
Regular weekly wage depending upon individuals ability
  - C. Little seasonal change - all year employment - the skilled workman can always find employment steadily

## VII. Promotional Possibilities

- A. Promotional Steps
  - 1. Apprenticeship method followed by journeyman
  - 2. Foreman of a department
  - 3. Assistant superintendent and superintendent
- B. Practical experience gained at the various jobs is the method by which skill is acquired in the lithographing operations. This should be supplemented by a general education which aids one to analyze or investigate problems. Ability to accept community responsibilities is just as important as industrial life itself.

## Unit "D" - The Engraving Trades

### I. The Development of Engraving

- A. Three general branches of printing
  - 1. Letter-press printing, design is raised, stands up in relief
  - 2. Intaglio printing, cut into a metal plate
  - 3. Lithographic printing, no lowered or raised design is used
- B. Several Types of Engraving
  - 1. Wood engraving, design stands above surface of block
  - 2. Copper and steel-plate engraving, lowered-surface process
  - 3. Photo-engraving, relief process

### II. Divisions of the Industry

- A. Line or intaglio engraving shops
  - 1. Processes of steel and copper-plate engraving, printing, embossing, and etching are performed
- B. Commercial photo-engraving shop
  - 1. Operations necessary to produce the half-tone cut, the zinc line etching, or, in some cases, a woodcut, are performed

### III. The Work in the Intaglio or Lowered-Surface Engraving Plant

- A. Types of Workers
  - 1. Designer
  - 2. Hand engravers
  - 3. Operators of engraving machines
  - 4. Plate printers who use hand presses
  - 5. Hand embossers
  - 6. Power-press embossers
  - 7. Packing department workers
- B. The Operations Performed
  - 1. Hand engraving
  - 2. Machine engraving

3. Printing from engraved plate
4. Embossing, process of printing raised letters or designs
5. Assembling, packing, and shipping

#### IV. The Work in the Photo-Engraving Plant

##### A. Types of Workers

###### 1. Art Department

- a. Designer
- b. Figure man
- c. Mechanical retoucher
- d. Fashion artist
- e. Illustrator

###### 2. Operating Department

- a. Camera
- b. Negative printers
- c. Strippers
- d. Printers on metal
- e. Etchers
- f. Routers
- g. Finishers
- h. Blockers
- i. Proofers

##### B. The Operations Performed

1. Process of making a halftone
2. Printing the halftone
3. Production of zinc line etchings

#### V. Entrance to the Engraving Trades

##### A. Education and Training Required

1. Some art training
2. At least an eighth-grade education and a thorough knowledge of arithmetic, reading, and spelling
3. Good, clear handwriting

##### B. Age of Entrance

1. May enter at 14 or 15 but 16 is more advisable age

##### C. Physical and Personal Requirements

1. Good health, good eyesight, and use of both hands
2. Skillful in use of hands
3. Individuals who like variety should not enter
4. Artistic taste, sense of color values, and originality

##### D. Entrance to the Engraving Trades

1. Apprenticeship, 4 or 5 years, receives wages
2. Journeyman
3. Employer

#### VI. The Working Conditions

- A. Hours 44 to 48 per week - 8 per day ( trend to lessen
- B. Wages - a minimum wage - by the week
- C. Practically no dangers



- D. Seasonal work - spring and before Christmas busy seasons. An attempt is being made to balance work of year

## VII. Promotional Possibilities

- A. Promotion in responsibility
- B. Promotion in form of wage increases
- C. The Value of Education
  - 1. Prepares one to handle the positions of responsibility
  - 2. Develops appreciation of everyday life and surroundings
  - 3. A general education is of value in helping us to perform our civic duties
  - 4. An all-round education can best be obtained by taking a general high-school course

## Unit "E" - The Bindery

- I. "The bindery is that branch of the printing industry which takes the printed sheets from the pressroom, assembles them, fastens them together in one of several ways, and cuts or trims them to the required sizes."

## II. The Importance of the Bindery

- A. Puts the finishing touches on the printed article
- B. Must make product attractive, pleasing in appearance, and durable.

## III. The Work of the Bindery

- A. Divisions of the Work
  - 1. Bookbinding proper, or edition work
  - 2. Pamphlet, or magazine binding
  - 3. Binding of loose-leaf covers
  - 4. Miscellaneous operations, such as ruling, punching, cutting, perforating, crimping, etc.
  - 5. Mailing work in a newspaper printing plant
- B. Bookbinding Operations
  - 1. Folding (bone folder for hand folding) folding machine
  - 2. Gathering
  - 3. Signatures, folded sheet before it is trimmed and divided into the pages which it contains
  - 4. Collating, process of examining the gathered book to see if signatures are in proper order
  - 5. Smashing, process of compressing the books in a machine
  - 6. Rounding and backing, to give back a rounded appearance, to make possible free book opening
  - 7. Case making, process of making covers
  - 8. Finishing, placing decorations and lettering on

covers.

C. Miscellaneous Bindery Operations

1. Ruling, making lines on blank sheets of paper
2. Punching
3. Perforating
4. Numbering
5. Crimping
6. Cutting
7. Trimming

IV. Entrance to the Bindery Occupations

A. Education and Training Required

1. Eighth grade graduation - no special training

B. Age of Entrance

1. Young men and women of 16 and 17 are hired but older people are preferred

C. Physical and Personal Requirements

1. Good health and use of both hands
2. Mailing room requires strength
3. Cheerfulness and the ability to get along with others
4. Ability to respond to emergency situations
5. Patience and ability to work steadily

D. Methods of Entrance

1. Learners for a period of five years - apprenticeship - wages according to accomplishments
2. Journeyman

V. The Working Conditions in the Binderies

A. Health conditions not the best in the old buildings but must meet certain legal requirements

B. 48 hours of work per week - close at noon on Saturdays

C. Very little seasonal work

D. Wages are equivalent or more in comparison with other industries and increase with period of service

VI. Promotional Possibilities

A. The Promotional Steps

1. Learner or helper
2. Foreman of the mailing room
3. Circulating department
4. Circulating manager

B. The Value of Education

1. Prepare for adequate living
2. Prepare to perform certain citizenship and home duties
3. Prepare for the spending of our leisure time profitably and enjoyably.

## CONCLUSIONS

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## CONCLUSIONS

In summing up the points for the final estimates of this study a careful review of the problems will now be given.

The problems have been prepared from the point of view of the producer and that of the consumer whose interests are specifically, printing advancement, and, generally, human betterment.

The methods and techniques used and suggested, require a rather complete change in the teacher in regard to basic philosophy and method. The change cannot occur over night but it can come about through hours of training in preparation, organization, and continuous research in the fields chosen for this thesis. It will require a type of teacher that has vision and a keen insight into life needs and possibilities for the future, that he may be skillful in guiding students in their generalizations.

In developing the Course of study unit the writer defines a course of study as a detailed presentation of teaching materials showing, (1) aims (2) content (3) method.

It is recommended that general aims be set up which will contribute to the seven major objectives of secondary education, thereby striving toward unification and standardization. From two to five specific aims are believed essential for each subject. It is necessary too, to set up a definite and clear cut set of criteria which may be

applied to all school subjects. The subject-matter :

1. Must be flexible
2. Must meet the needs of the individual--many occasions to use knowledge gained
3. Numbers using this knowledge must be large
4. Must be in small enough units to be of definite benefit to all concerned regardless of the length of time that any individual spends in the course
5. Consumer knowledge more important than producers' interest
6. Must be of immediate use rather than remote
7. Must be related to other school activities
8. Must give appreciation--insights--understandings
9. Must contribute to the general aim of education

The Changes needed are :

1. Aims and purposes must make for organized education
2. A new program of studies which will be in harmony with aims of education
3. New content of use to society
4. New method teaching how to think
5. Appreciation rather than skills

The trade analysis charts give to the instructor and others concerned, a birds-eye-view of the total content of the trade. This enables the instructor to select in a more scientific manner the units he wishes to teach.

It is quite obvious that to write a complete set of instruction sheets, covering all the operations and items of information listed in the analysis chart, would require more time and space than would be possible within the span of this thesis. It was possible, however, to select some of the major operations or topics of information not adequately treated by instruction sheets now available and to cover these operations and topics with instruction sheets, the organization of which meet the criteria set

up by this thesis.

It is believed by the writer that all teachers should have a working knowledge of instruction sheet writing, not that everyone should actually write his own sheets but that he might do a better job of selecting and using available sheets. For this reason sample sheets have been set up with the hope of at least giving examples of the various types that have been found helpful. Among the advantages claimed for instruction sheets, the following list will give those of greater importance :

1. They should provide for individual help to each student so that he might progress in the shop at his own rate of speed.
2. They will aid the instructor in handling larger classes more efficiently.
3. They make for a transfer of initiative from the instructor to the student.
4. They aid in giving the instructor time for the individual who really needs personal help.
5. They make for better selection, organization, and interpretation of subject-matter.

In concluding the unit on guidance let us define guidance as that process of helping any individual solve his problems; that educational guidance is the process of helping an individual plan for a well-rounded education, one that will meet his varied needs, interests, and abilities; that vocational guidance is the process of helping one choose, prepare for, enter into, and make progress in a suitable occupation.



Guidance is necessary and essential whenever and wherever there is a possibility of choice; the greater the possibility of choice, the greater the need for guidance; the more purposeful the guidance, the more effective the choice of the young and inexperienced individual.

Facts needed in giving suitable guidance:

1. Intelligence Quotient (I.Q.)
2. Interests
3. Special ability
4. Background
5. Social status
6. Ambitions
7. Economic status
8. Parental information

Facts to consider concerning individual differences:

1. Those interested in people (teachers)
2. Those who prefer working with ideas (inventors)
3. Those who would rather work with things (mechanics)

Factors to consider in occupational information:

1. The history of the occupation
2. The importance
3. Divisions of the industry
4. Entrance to the trade
5. The working conditions
6. Promotional possibilities
7. The value of education

It is just as essential in printing guidance as it is in any other type of guidance that adequate information be given concerning pseudo-guidance and that each individual be so equipped that his reactionary methods will be in the right direction.

The author has attempted to present a definitely organized plan of procedure for this thesis problem, with emphasis on chosen units in-as-much as these seem to be the greatest need in the field of printing instruction. In so doing, he is fully aware of the fact that this invites a wealth of criticism. Rather than resorting to straddling the fence on any question, without reaching any definite conclusions, the writer has chosen deliberately the other plan of attack with due regard for its consequences.

At the close of this writing care has been taken to give proper acknowledgment to the sources from which materials have been obtained, with specific statements regarding usage.

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