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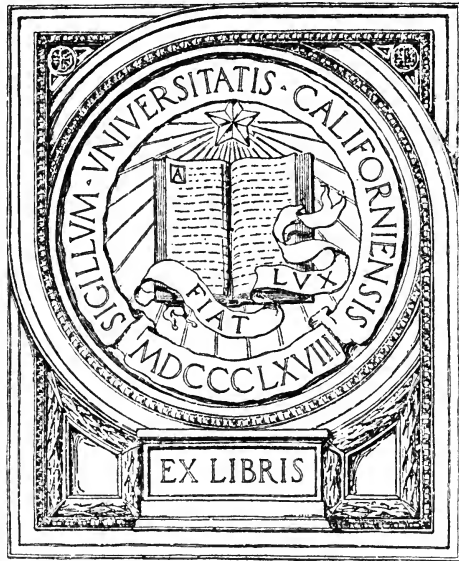
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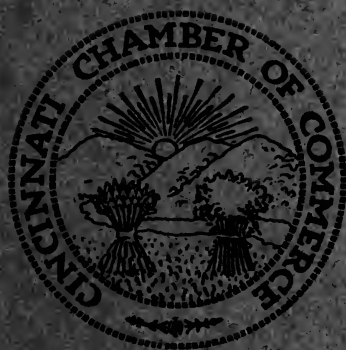
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FEBRUARY, NINETEEN FIFTEEN

CINCINNATI, OHIO

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CHARLES R. HEBBLE.

This report is based upon field work and research by Arthur M. Boulware, and has been compiled by F. P. Goodwin, of the Committee, in collaboration with C. R. Hebble, Director of the Survey.

SUMMARY OF CONSTRUCTIVE RECOMMENDATIONS.

1. To promote proficiency in fundamental studies by youth who will never reach the high school, teachers should be employed in the lower grades who can and will inspire their pupils. These youth need inspiration more than any other class of school pupils.

2. Organize the public school for co-operation with the shop, so that manual skill and trade knowledge will be gained in the shop, while the school confines itself to the theory and technique of the trade, and to moral and civic instruction.

3. A continuation school should be established to take the place of the present printers' school on Ninth Street. This should be attended by boys who are beginners in the trade; the time of attendance should be not less than 8 hours per week.

4. Establish a half-time co-operative high school course for beginners in the printing industry when there is a demand for it.

5. Use should be made of the educational content of trades, herewith submitted, in determining what should be taught in the school.

6. If machinery be introduced into the continuation or co-operative school, it should be for the purpose of illustration only and as determined by its educational value.

7. Courses for journeymen in the printing trades should be established in connection with night schools. Instruction to journeymen should be given in night schools only.

8. Printing should be introduced as a manual-training subject in the public schools.

9. The teacher of printing should be selected from the trade and not from the schools.

10. Place the age limit of compulsory full-time school attendance for children who have completed the eighth grade at 14 years, and for children who have not completed the eighth grade at 15 years. Compel all children under 16 years who have not completed the eighth grade to attend school half time.

11. Make the public-school authorities, through the work-certificate office, truancy department and continuation schools, in a great measure, or perhaps entirely, responsible for the enforcement of the child-labor law.

12. Establish for the children who are compelled to go to work, half-time courses in which the academic instruction is closely related to the work of the shop.

13. Develop full-time courses in which half time is devoted to manual work and so as to furnish opportunity for all children who need such training.

14. Amend the present law so as to give the school control of youth in industry until 18 years of age. Exercise this control through the continuation schools, by extending the work of these schools so as to provide training for beginners or apprentices between 16 and 18 years of age. Make such schools truly industrial schools.

15. Apprenticeship agreements should be entered into between the shop, the apprentice and the school, certain fundamental points being suggested.

A WORD TO EMPLOYERS.

The findings of this survey show that the training of beginners in the printing trades is almost entirely neglected; that while the introduction of labor-saving machinery and specialization is a contributory cause, the responsibility for this condition rests for the most part with employers; that the trade is suffering from a lack of proper training of beginners; that the shop should train in manipulative skill and for the most part in trade knowledge; that the school should supplement the work of the shop.

The public schools of Cincinnati can make effective such a system of co-operative education only with your help. As employers, you have a responsibility to the beginners in your employ, to the trade and to the community. Will you join with the public school in establishing a system of industrial education for beginners in the printing trades that will fit them for their best service in the shop and in the community?

RESUME OF PRINCIPAL FINDINGS.

1. On the whole, the printing industry offers good opportunity for the boy who wants to learn a trade and is adapted for this work. The work is generally healthful, employment regular and income good.

2. There are but few bona fide apprentices in Cincinnati shops, except the small number working under agreement with the unions.

3. The survey by the United Typothetae of America shows that, out of 496 shops, 397 reported 866 boys, of whom only 145 will have an opportunity to learn some department of the industry.

4. There is little well-organized effort by employers to see that beginners are properly instructed; they simply pick up knowledge and experience from what they see others do.

5. Apprentice instruction consists of simply turning the boy over to the foreman or to some workman, who does or does not instruct the boy, according to his inclination or opportunity. Such instruction when given consists of the simplest fundamentals. The shop is failing in its duty toward the beginner.

6. Employers in nearly every instance indicate that beginners lack in general intelligence and that they are deficient in reading, writing, grammar, punctuation, capitalization, arithmetic, etc.

7. Nothing less than completion of the eighth grade of the elementary school will suffice for success in the printing trades.

8. Boys entering the trade too often do not grasp the work idea properly and are not amenable to discipline, show little or no ambition to do good work and lack inspiration and high ideals; they look more to the immediate wage than to the future income.

9. A system of vocational guidance which embodies economic and ethical instruction of such a nature as to inspire the boy with correct ideals concerning his relation to the job would be welcomed by the employers and of undoubted value to the boy himself.

10. A public-controlled school may be organized and conducted in co-operation with the shop so that all the advantages of a shop-controlled school may be secured, and more. In addition to this, it will eliminate serious objections to shop-controlled schools.

11. The public school has a legitimate function which it must perform. It is the duty of the shop to give apprentices full opportunity for that trade training and practical experience which can be secured best in the shop, but to leave to the school the supplementary training in technique, theory, and citizenship. In other words, the school should train *for* the industries but not *in* the industries. This idea is concurred in by the official representatives of the United Typothetae of America and by the committee on industrial education of the American Federation of Labor.

12. The educational content of two of the printing trades is submitted. Specific courses of study should be worked out by the director of the school in co-operation with persons connected with the industry.

13. These three main purposes should dominate the school for printers' apprentices: (1) Education to skill in work and joy in

work; (2) Education to readiness of service, consideration for others and loyalty; (3) Education to insight into the aims of the community.

14. Employers, as much as the teachers, will make the school what it is. Failure on their part to give full opportunity in the shop might compel the adoption of a less efficient means of education.

15. There has appeared no worthy argument in favor of a trade school which is supposed to turn out skilled workmen.

16. Important as is the training of the beginner, the opportunity for further education in the theory and technique of his work should be given to the journeyman who is ambitious to advance. Such instruction should be given only through night schools.

17. Printing in the public school is highly desirable as manual-training work—but should always be considered manual-training work strictly, and not in any sense the teaching of a trade.

18. Schools in which printing is taught as a manual-training subject should not commercialize their work.

19. No other form of manual training can be introduced into the public schools that can be made to yield such large results in developing a clearer and better understanding of language and in giving definite value to drawing as that of printing, provided in teaching it emphasis is given to the literary instead of the mechanical side of the work.

20. The introduction of printing as a manual-training subject is recommended for the pre-vocational classes of the elementary schools and for the high schools. This procedure has met with the approval and support of the unions in other cities.

21. The teacher of printing should be selected from the trade, not from the school.

22. There are at least 3,000 pupils between the ages of 14 and 16 years for whom the present elementary schools do not make adequate provision.

23. There are 1,250 over-age children between 14 and 16 years of age who need to go to work as soon as the law will permit and who should have an opportunity of a combination of work and school, by co-operative courses, one-half time in school and one-half time at work.

24. There is need for extension of continuation-school courses for pupils between the ages of 16 and 18 years with more time to work and a lesser portion of the time to school.

25. The chief difficulty with the present age and schooling law is that it lacks flexibility.

26. Apprenticeship agreements between the shop, the apprentice and the schools are advisable; certain fundamental points are suggested.

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FOREWORD.

In the autumn of 1913 the suggestion came from the Cincinnati Public Schools to the Chamber of Commerce that it conduct a vocational survey of the leading industries of the city for the purpose of obtaining information on which to base an extension of the industrial education of the city and for the purpose of guidance of youth going into industry.

About the same time the suggestion came from another source that the Chamber of Commerce conduct an industrial survey for the purpose of obtaining information which would help in the commercial and industrial development of the city in the way of locating new factories, helping factories already here, improving housing of workmen, adjusting freight rates, etc.

For the consideration of these propositions, a joint meeting of the Industrial Committee and the Commercial Education Committee was held November 8, 1913. In addition to the members of the two committees, there were in attendance the president of the Chamber of Commerce, Superintendent of Schools, school supervisors and high school principals and representatives of the faculty of the University of Cincinnati.

As a result of this meeting, there was transmitted to the Board of Directors, on December 15th, a report of the two committees above mentioned in which it was stated that such a survey was necessary and desirable, for the following reasons:

1. In so far as our *industrial* development is concerned, to encourage the larger development of industries or businesses already established in the city and its environs.

2. To induce outside capitalists to locate new plants and establish new businesses in our midst.

3. To encourage the development of a skilled and co-operative industrial and commercial working population.

1. In so far as our *educational* development is concerned, to furnish information on which to base an extension of vocational education in Cincinnati.

2. To furnish information as to opportunities and conditions in the vocational world of Cincinnati on which young people may more wisely base their choice of a life career, and by which teachers may better direct students to the kind of information which will best fit them for their future work.

Subsequently the Board of Directors approved the project, and, on January 1, 1914, upon the organization of the Civic and Industrial Department, the survey was placed under the direction of its man-

ager and a committee of the following members of the Chamber of Commerce: R. A. Colter (chairman), Sidney E. Pritz, Frank P. Goodwin, Walter S. Schmidt and Ernest A. Weier.

The original idea of the two groups proposing a survey was that the two surveys could be considered as one, the intention being to proceed at first with only a preliminary survey. It was soon found, however, that the two surveys would have to be conducted separately. That plan was adopted, and they have been so conducted at the same time and under the same direction.

The plan adopted by the committee for the industrial section involved the immediate gathering together of data in regard to the elements of the industrial situation and classification of this information as it was collected, thus making it immediately available for use either in an effort to locate new industries, for the benefit of enterprises already established here, for civic instruction in the schools, or for information to the citizens.

It was determined by the committee that when this part of the work was completed it would be possible to decide along what lines intensive studies should be made, if, indeed, it might not be possible to make several intensive studies while the work of classification was being carried on. Coincident with this work, it was decided to conduct the vocational survey.

THE VOCATIONAL SURVEY.

From the beginning it was appreciated that the right sort of working population was of the utmost importance both to the industry and to the municipality; that the right kind of workers will not only be the most efficient workmen, but that they will make better citizens and better promote the welfare of themselves and the community. Therefore, it was determined to emphasize by particular effort that part of the survey which was to collect information which might assist the public schools in better training the working people of the city.

In preparing a plan of the vocational survey, the Director has followed in general the principles suggested by Chas. R. Richards, director of the Cooper Union, New York, in a paper read at the Grand Rapids (1913) meeting of the National Society for the Promotion of Industrial Education.

After conferences with Mr. C. A. Prosser, secretary of the National Society for the Promotion of Industrial Education; Mr. Charles Richards, of the Cooper Union, New York; Mary S. Woolman, of the Woman's Industrial Union of Boston; Mr. C. A. Winslow, of the U. S. Department of Labor, and others, the Director, in conference with Mr. Frank P. Goodwin, member of the Chamber of Commerce committee, and the representative of the Superintendent of Schools in the survey, proceeded to attack the problem of the scope and method of the survey.

Scope and Method.

The scope of the vocational survey was determined to be:

1. An examination into several important industries of the city with a view of determining what the public schools may do toward the education of the workers in these industries. (This work to be done under the supervision of the Director of the Survey.)

2. An inquiry into what the public schools are now doing in industrial education. (This work to be done by a committee appointed by the Superintendent of Schools.)

3. An inquiry into the facilities now offered by agencies other than the public schools for industrial education. (This work also to be done by a committee appointed by the Superintendent of Schools.)

It was determined to carry on research into the various industries by means of questionnaires, submitted personally to employees and employers; to make a close personal study of the manipulative processes of these industries; to make a thorough inquiry into any

similar surveys that may have been made by others; to make a study of all available reports, etc.; to base the investigation on the fundamental idea of making an inquiry into the educational content of the various occupations, for the purpose of determining what a workman in a given occupation needs to know, what the shop can advantageously teach him and what the school should do to help.

Questionnaires were devised after a careful study of all available written and printed matter.

The whole plan was then laid for approval before Messrs. Prosser, Winslow and Richards, and then submitted to Dr. Randall J. Condon, Superintendent of Schools, and the Survey Committee of the Chamber of Commerce.

Mr. Arthur Boulware was then employed to do the field work, and the investigation thus had its beginning about April 15, 1914.

Occupations Selected For Study.

The committee decided that, first of all, a vocational survey should be made of one or two industries, in order that the best methods might be determined upon, and later various other occupations be considered as rapidly as possible.

In selecting the printing trades as the subject for the first inquiry, the committee was influenced by the following facts:

1. Of the four principal industries it has the smallest number of wage-earners. (1910 Census—Foundry and machine-shop products, 8,534; Shoes and leather, 7,989; Clothing, 7,043; Printing and publishing, 3,866.)

2. It is generally considered that wage-earners in the printing trades are above the average workmen in intelligence.

3. The trade appears to be well organized upon the side of the employers, and, while less than half of the workmen are members of the unions, some of the occupations are quite thoroughly organized and several large establishments operate union shops.

4. The wages paid appear to be higher than those of the other principal industries, as indicated by the following schedules from the U. S. Census:

	Salaried Employees to Total Employees.	Average Yearly Wage.	Average Yearly Salary.	Value Added to Total Products.	Wages to Total Products.
Printing and publishing	23.4%	\$647	\$1,075	69.8%	23%
Foundry and machine-shop products	13.0%	580	1,265	87.5%	25.9%
Boots and shoes	7.9%	440	1,467	42.8%	23%
Men's clothing	12.3%	417	1,210	50.6%	17%

RANK OF PRINTING AND PUBLISHING COMPARED WITH OTHER MANUFACTURING INDUSTRIES.

Value of Products:

4th in Cincinnati.
6th in Detroit.
7th in Buffalo.
6th in Cleveland.
4th in St. Louis.
2nd in Boston.
7th in Pittsburg.
2nd in Philadelphia.
3rd in Chicago.
3rd in New York.

Value added by Manufacture:

2nd in Cincinnati.
4th in Detroit.
2nd in Buffalo.
4th in Cleveland.
2nd in St. Louis.
2nd in Boston.
6th in Pittsburg.
1st in Philadelphia.
2nd in Chicago.
1st in New York.

INFORMATION FROM EMPLOYERS.

The information from employers was obtained by means of a questionnaire, which, accompanied by an explanatory letter, was mailed in each case to the proprietor, manager, superintendent or other responsible officer. For copy of the questionnaire see Exhibit I. This questionnaire was submitted to 219 selected firms, classified as follows:

General printing:	
In Cincinnati	136
Covington-Newport	8
Machine composition	3
Stationers	11
Publishers	15
Lithographers	9
Lithographers (labels only)	2
Engravers	20
Blank-books—Rulers	5

Only about 10 per cent of the 219 reports were returned by mail without further solicitation, which made personal calls necessary. In all, 62 fairly complete reports were received. At first thought this might seem to be very small percentage, but in view of the fact that the majority of printing establishments in this city employ less than five men each, returns from 62 representative firms should establish the general status of conditions in the industry.

The usual replies given by the proprietors of the small shops in explaining their failure to complete the questionnaire may be summed into composite statements as follows:

1. On account of the small size of their establishments, they cannot possibly enter into any agreement with the public schools to provide for industrial training for any boys employed by them.

2. If they were to furnish any information it would be of no value, because their experience with beginners was so limited that they could not answer the questions asked in regard to the relation of the occupation to industrial training. Any information they might furnish could be but guesswork on their part.

3. It is the opinion of the small-shop proprietor that agreements relative to industrial training for the work in the trade can only be carried out to advantage in shops where there are a large number of employees. The only sort of industrial training that would benefit the proprietor of the small shop would be to teach the boy a trade before he begins to work in the shop.

The relative size of the shops engaged in general printing, according to the number of men employed, tabulated by a man familiar with the printing establishments in this city, is as follows:

Approximately 25 shops employ less than 4 men.	
Approximately 60 shops employ from 4 to 8 men.	
Approximately 75 shops employ from 8 to 15 men.	
Approximately 20 shops employ from 15 to 25 men.	
Approximately 20 shops employ from 25 to 50 men.	
Approximately 15 shops employ from 50 to 100 men.	
Approximately 9 shops employ from 100 to 200 men.	
Approximately 1 shop employs 200 and over.	

The period during which the survey was conducted was one of business depression, and for this reason some of the employers were reluctant to furnish any information regarding their business affairs, although they were assured that replies to all questions were to be held strictly confidential.

In addition to the general indifference expressed by a large number of employers toward the promotion of any sort of industrial training for the workers in the trade, the excuse given by many for not furnishing information was that they were compelled to fill out several government and state reports about the same time; furthermore, because of the penalty for non-compliance with state or national orders they would not, or rather some said that they did not have the time to fill out any reports unless they were compelled to do so. Because all the information furnished in this investigation was purely voluntary, many indifferent ones took advantage of this state of affairs and consequently gave no information. Completed questionnaires were furnished by employers operating both union and non-union shops.

Information From Employees.

The first method adopted to secure information from the workmen was by direct interview, having them fill out the questionnaire during the interview. This method was soon abandoned because employers throughout the city have adopted a fixed policy of forbidding interviews with workmen by anyone. Another reason for abandoning the original plan was that when the questions were

answered in the shop the workmen did not have time to give them proper study.

Because of these things it was decided to go to the foremen of the representative departments, explain to them the purpose of the survey and secure their approval of the work and give them questionnaires to be distributed among the workmen. The questionnaires, each in an individual envelope, were then given out by the foremen to the workmen with the request that they fill them out and when completed return them to the foremen or office. It was necessary to revisit some shops many times because of the tardiness of the employees in filling out the questionnaires. For copy of questionnaires, see Exhibit 2.

The number received in this way was about 10 per cent of the number submitted. The total number completed and returned was 234, classified in occupations as follows:

Compositors	43
Machine operators	15
Press assistants	19
Pressmen	42
Binders	52
Electrotypers	7
Litho men	17
Paper-cutters	2
Rulers	3
Stereotypers	1
Miscellaneous	33

We confess to our disappointment in not being able to obtain that assistance, from the workmen in union establishments and from the local unions, which we desired and sought in order that facts and conclusions drawn from them might represent both the union and the non-union point of view. The approval and assistance which the national officials of organized labor have given to similar surveys, and the co-operation which local unions and their members have given elsewhere in the development of industrial education, lead us to believe that as we pursue the subject further, and as our purpose is better understood, we may expect that assistance from the unions here which we believe to be necessary for the development of that form of industrial education that shall meet the needs of the entire community and which shall have the confidence of all.

We wish to state frankly that in this and all similar studies which may be undertaken the co-operation of organized labor is desired, to the end that all interests may work together with good understanding and good will in helping to develop a system of education which, with equal impartiality, shall benefit the employer and the employee—those who are union and those who are non-union alike.

We are seeking without bias of opinion to obtain the facts; to get at their meaning; to draw such conclusions and to make such recommendations as may help the Board of Education and those working under their direction to develop a system of industrial education in Cincinnati that shall make for better economic, social and civic conditions by producing more skilled workers and better citizens.

CONDITIONS IN THE INDUSTRY.

Before taking into consideration a program of industrial training for any group of workers, it will be well to consider what there is worth training for in the industry. This will include an inquiry into all of those conditions which affect the health, intelligence, manual development, moral influences, regularity of employment, hours of labor, opportunity for promotion, etc.

On the whole, the printing industry offers good opportunity for the boy who wants to learn a trade and is adapted for this work. The work is generally healthful, employment regular and income good.

Health.—A considerable majority of both employers and employees say there is no physical or nervous strain or unhealthy conditions peculiar to any of the various printing trades. There is little doubt, however, but that a limited number of compositors find their work injurious in some degree to the eyes and nerves; and in some shops type dust affects a few of the workers. Occasionally a machine operator finds that the odor and fumes of hot metal are injurious; some pressmen suffer from the vapor and odor of the ink, while others operating rapid and intricate presses are subject to certain nerve and eye strain. Press feeders in some shops may suffer injurious effects from inhaling paper dust and chemicals in the ink, while pressmen sometimes are also subjected to excessive heat, heavy lifting and eye strain.

Intelligence.—There is much in the work to stimulate the intelligence, particularly in the trades of compositor and pressman; perhaps only in press feeding and the mechanical processes of book-binding do we find work which restricts mental and manual development. (See description of occupations and processes.)

Moral Influence.—The moral influences are generally good; there is no question as to this point.

Regularity of Employment.—In the selection of a vocation, regularity of employment is of great importance, because it determines regularity of income; and that, in turn, together with the rate of wage, fixes the possible standard of living. A recapitulation of replies to our questionnaire to manufacturers shows that sixty-two selected firms reported a maximum in service of 2,406 and a maximum service of 2,125 for the year 1913, a difference of 381, or 16 per cent of the maximum. Thirty-six compositors lost an average of 2.4 weeks other than from sickness in 1913; nineteen lost no time. The average for lost time in the other occupations is approximately the same. (See table showing maximum and minimum employed in 1913.)

Hours of Labor.—In union shops eight hours constitutes a day's work, with four hours on Saturday; 44 hours for the week. In non-union shops the hours run from 48 to 60 hours per week, with an average of 52.8 for compositors, 50 for machine operators, 50 for pressmen; Saturday work from 4 to 8½ hours, but for the most part from 4½ to 5 hours.

Wages.—The rate of wage in the various trades of the printing

industry varies from \$5.00 per week for female bookbinders to \$30.00 per week for high-class compositors and machine hands in newspaper offices (regular time). On the whole, union shops pay a higher wage than do non-union shops. The union scale for compositors is a minimum of \$21 per week; the non-union shops pay from \$4.00 for beginners to \$28.00 per week for exceptionally skilled workmen. The average wage is probably about \$19.00 per week. A monotype-keyboard operator (union) receives \$25.00 per week, while a non-union operator receives from \$10.00 for beginners to \$28.00 per week for the specially skilled. A union cylinder pressman receives \$22.50 per week. (See table of wages and conditions in the allied printing trades. Also see union scale of wages and hours of labor, U. S. Department of Labor, Bulletin No. 143, page 27.) The initial wage of beginners varies from \$2.50 to \$9.00 per week; the average of eighteen shops for compositors was found to be \$5.35, and the average of fourteen shops for pressmen, \$5.93. The average income of wage-earners in the industry is considerably higher than the annual income of wage-earners in other industries. Whereas, in 1909 (U. S. Census Reports) the average wage of all manufacturing establishments in Cincinnati was \$520, the average wage received by persons engaged in printing and publishing was \$641. This was lower, however, than that of any other large city reporting, with the exception of Baltimore. The average salary of employees in the printing trades was \$758; the average salary of officials, \$1,685.

In the study of the industry, for the purpose of guidance we should take into account the economic value to the community. It has been shown that the printing industry occupies fourth place in the great industries of Cincinnati. In 1909, 280 establishments, with a combined capital of \$8,450,000, employed a total of 5,391 persons, 3,866 of whom were wage-earners. These 280 establishments paid annually \$3,858,000 for services and turned out a product to the value of \$8,170,431.

Promotions.—The introduction of machinery and specialization have materially affected promotions in the printing industry. The "old time printer," who knew everything and could do everything in connection with the printing business, is a thing of the past. The trade of printing is now divided into five trades or departments: hand compositors; machine compositors; cylinder pressmen; platen pressmen; bindery employees.

The learner usually begins in one of these divisions of the industry and sticks to it, although occasionally cutters, press feeders and press assistants leave to become compositors; promotions for the most part are departmental. It will be seen, therefore, that, owing to the high specialization which is now characteristic of the industry, but few men can become all-round workmen. Especially is this true of employees working under union rules.

In fact, there are eleven unions in the allied printing trades in Cincinnati, and no union man is allowed at any time to do work other than that belonging strictly to his own trade as stipulated by his union. Thus union men can never become all-round workmen

even in small shops. The very rules of their organizations force a high degree of specialization upon them. It would appear, therefore, that the possibility of union men becoming foremen or securing positions as executives is bound to be slight, except after securing their all-round training in small shops, and then becoming members of the union.

In this connection, it may be remarked that in the printing business, as in all other lines of manufacture, the large shop must organize its work with a high degree of specialization in order to meet competition and remain in business. From this it would seem that in a large shop there is slender opportunity for a workman to become an all-round workman, whether he is governed by union rules or not.

Number of Beginners Each Year.—As indicated in another part of this report, the school should train no more beginners for a given trade each year than the trade demands. An effort was made, therefore, to learn how many beginners are needed each year in Cincinnati. As answers to employers' questionnaires in regard to this question did not furnish the desired information, estimates were obtained from three persons well acquainted with the trade—one a trade-union representative, one an official of an employers' organization, and one an employer. The estimates of the trade-union representative are highest. The average of the three indicates that the trade demands annually about 35 compositors, 25 pressmen, 65 press feeders and press assistants. For detailed information in regard to these and other trades connected with the printing industry see Exhibit 5.

WHAT WORKERS NEED TO KNOW BEFORE ENTERING THE INDUSTRY.

In considering the problem of industrial education for workers in the printing trade, we should begin by endeavoring to determine what workers need to know before entering the industry. This may be answered in part by statements of workmen as to their age and scholastic attainments at the time of entering.

The reports from hand compositors indicate the average age at which workers left school was 14.6 years, and that the men reporting on an average completed 7.7 grades of the elementary school. In reports from 37 compositors, we find 9 who claim that they have not been hampered by a lack of school training; nineteen failed to answer this question. Of the 37 compositors reporting, 6 went to night school, 5 taking general commercial courses and 1 two terms of the printers' school.

Reports from 14 machine operators, all of whom passed through the eighth grade, show an average age of 15 years at leaving school. In regard to lack of training before entering the industry, 9 gave no information and 2 reported that they were not hampered by a lack of knowledge; 1 reported himself deficient in spelling and punctuation; 1 reported advancement slow, but did not attribute this to any lack of training.

Machine compositors seem to appreciate more fully the necessity for additional training than do hand compositors. From 14 reports received, 6 workmen made use of the night school, taking courses in art, English, architecture, etc., and 1 took a course in linotype operating.

The schooling of press feeders and pressmen before entering the industry compares favorably with that of compositors. The average age at which press feeders left school was 15.4 years; they completed on an average 7.5 grades of the elementary schools. Press feeders, however, are better satisfied with their scholastic attainments than are compositors. From a total of 19 reports, 17 reported not hampered by a lack of knowledge or school training. The greater satisfaction of pressmen and press feeders with their scholastic attainments is further emphasized by the fact that only two of those reporting received any school training after leaving the elementary school. As has been said before, the occupation of press feeders does not require a person with a high degree of intelligence, but in as much as pressmen are chosen from the ranks of press feeders, it behooves a press feeder to make all the preparation needed by a pressman.

Reports received from 41 pressmen indicate the average age of leaving school as 14.7 years, and that on an average they completed the 7th grade. The pressmen reporting seem not to regard themselves as being hampered by lack of knowledge or school training, as only 1 man reported any lack of training in spelling and reading; only 6 reported any school attendance since leaving the elementary school. These attended the Y. M. C. A. night school, taking general course in English, etc. In no instance does any man report attendance at a printers' school.

It appears, therefore, that from the journeyman's standpoint, a common-school education in the fundamental subjects, writing, grammar, spelling, arithmetic, etc., is sufficient for entering into the printing industry. A few of the men recommend the study of design, history of printing, etc., in the elementary school.

The value of high-school training was reported upon as follows:

Occupation.	Number Reporting.	Is Any High-School Training of Value?			Would Complete High School Course be of Advantage?		
		Yes	No	No Inf.	Yes	No	No Inf.
Compositors	36	25	7	4	22	8	6
Machine operators . . .	13	10	3	0	8	3	2
Press feeders	19	7	9	3	8	8	3
Pressmen	42	19	13	10	17	17	11

The above table indicates that the majority reporting recommend high-school training for beginners, in spite of the fact that answers to previous questions indicate that they have no appreciation of a lack of school training. We thus see that although the

men fail to state what specific training they lack, still they report that high-school training would be desirable. It is evident that a majority of the men realize their lack of education but cannot state just in what subjects they are deficient.

If we examine the returns from the employers we find that the consensus of opinion is that any school training for workmen other than compositors beyond the eighth grade is not necessary. Detailed reports as follows: not necessary, 23; would be of value to compositors only, 18; of value to all occupations, 5; no information, 12.

In answer to the inquiry, "Would experience seem to indicate that a high-school course is of advantage?" 37 employers answer no; 20 answer yes; and 5 did not venture an opinion. In answer to the question, "For what occupation would high-school training be of value?" 27 say compositors; 1, pressmen; 2, all.

The reports of employers and employees alike indicate that nothing less than a completion of the eighth grade of the elementary school will suffice for success in the printing trades. The reports of employees show that a considerable proportion believe that schooling beyond the eighth grade would be valuable especially for compositors. What should be the nature of such schooling will be discussed later in the report.

WHAT THE SCHOOLS FAIL TO ACCOMPLISH.

Reports of those in the industry indicate that the schools do not do all that could be done to train persons before entering the industry. As has been said, the majority of employees are satisfied with their scholastic attainment; only a few realize that they lack training in spelling, grammar, punctuation, arithmetic, etc. Employers, however, in nearly every instance indicate that beginners lack in general intelligence and that they are deficient in reading, writing, grammar, punctuation, capitalization, etc. The very lack of general intelligence in workmen should account for their failure to appreciate their lack of proper school training, and their consequent shortcomings as workmen.

Has such a reputation become established only by boys who have not completed the eighth grade, or are these defects common to all but the exceptional learner? Unfortunately, we have no data by which to answer this question, but from what we know of the scholarship of the eighth-grade graduates we have reason to believe that many of them go into the printing industry with insufficient preparation in English and arithmetic.

This condition has already existed and will perhaps continue to exist in so far as our schools continue the present system of academic instruction. This is due to the fact that our teachers for the most part do not know the needs of the industry and the students have no vocational motive for pursuing their studies. This is also due to the fact that for some reason the children are not thoroughly trained in the fundamental branches. How the vocational motive may be used as a guide and stimulant for the learning of necessary fundamentals will be discussed later.

In this connection numerous employees believe that the elementary school is merely a preparation for high school; that the chief business of the high school is to prepare for college, and that in a considerable degree the whole school system serves those who would enter the professions rather than those who enter industry. In the past there has been a measure of truth with which to substantiate such an opinion, but, fortunately, we are fast getting away from such a condition, and this survey is but an illustration of an earnest effort in that direction.

The mere fact that a boy knows that he will have to go to work from the eighth grade, but believes that the instruction given him is for the purpose of guiding him to high school, is in itself sufficient reason to explain indifference to his studies and consequent lack of fundamental knowledge. Might not this state of affairs account to some extent for the lack of vocational motive?

In this connection we should direct attention to the fact that proficiency in fundamental studies by a youth who will never reach the high school can be greatly promoted by **having teachers employed in the lower grades who can and will inspire their pupils.** These youths need such inspiration more than any other class of school pupils.

More serious in nature are the ethical and social charges against the schools which this inquiry has developed. **Employers complain that the boys entering the shop now-a-days are too "soft," consequently they fail to grasp the work idea properly and are not properly amenable to discipline.** They attribute this to a considerable degree to too little association with men teachers in the upper grades of the elementary schools; but perhaps, in so far as these charges are well founded, the blame should be distributed between the home, the school and the inexperience of youth.

Furthermore, employers claim that beginners are indifferent to their work and lack ambition and the "stick-to-it-iveness" necessary for success. They say that the majority of boys whom they employ will quit one position and go to another for a slight increase in wages, in spite of the fact that the frequent change of position reduces to a minimum the opportunity for becoming expert workmen. This tendency in the youthful workers is perhaps increased by the low wages which boys receive on entering the trade. In the printing industry, as in all work requiring skill, the beginner can earn only a very small initial wage; and, unfortunately, too many boys on entering a trade think more of the present wage than of the future income.

It is the opinion of numerous employers that the school is largely at fault for boys leaving school to enter employment with no definite ethical and economic ideals in regard to industrial life. The general complaint is that they leave school without a definite plan regarding their future work, that they lack stability, that they will not stay with one employer long enough to learn a trade and that they are without a sense of responsibility to employers, to the trade, to themselves. Certainly it is true that they consider the immediate wage

only, and do not have a proper appreciation of the difference between the skilled workman and one who can do unskilled work only.

There is no doubt that a system of vocational guidance which embodies economic and ethical instruction of such a nature as to inspire the boy with correct ideals concerning his relation to the job, would be welcomed by employers and of undoubted value to the boy himself.

Some employers have expressed themselves as believing that through the introduction of vocational training and vocational guidance the schools will be able better to analyze the mental and manual characteristics of boys for the purpose of discovering the special occupation for which each may be fitted. For example, from this survey it has been determined that a considerable degree of intelligence, accuracy, patience, color sense, keenness of sight, dexterity and artistic feeling are necessary to a compositor for success. By some simple tests combined with the work of the school it might possibly be determined to what extent students possess those characteristics. In this way, those fit for the occupation might be selected, or at least many of the unfit eliminated.

OPINIONS OF EMPLOYERS AS TO WHAT THE SCHOOL CAN DO.

There is a great diversity of opinion among employers as to what the schools can and should do for the worker before entering the industry; what the shops expect from the material that they receive; what in their opinion should be done as to possible changes in the present school-child-labor law; whether laws should be passed, and what is needed in the city in the way of trade instruction.

The following quotations from letters received are presented as illustrations of what employers think in regard to those questions. In regard to the attitude of the boy to his job, one employer says:

Teachers all through the schools should emphasize the necessity for the boy's selection of a proper vocation and his faithful attention to that vocation, with the object of becoming a master hand. He should be taught to consider the vocation as a journeyman, and not for what he can earn while learning the trade. The greatest obstacle to-day in securing apprentices, whether they are from the schools or from the streets, is the fact that the boy is more interested in what he will earn at the present day than what he will earn when he is a journeyman. The boy is encouraged by the parents, who want the immediate dollar.

It should be ground into the boy in school that the world needs good workmen, competent to fill the man's job, and that he will get plenty of money for his work if he *is* a good workman. It should be impressed upon him strongly all through the schools that it is more important that he should serve his apprenticeship with people who will teach him the trade thoroughly, than that he receive high wages for what he does. I believe that if the schools made it a point to advance these ideas and emphasize them to the pupils, both male and female, they would accomplish inestimable good to the mechanical arts if they did not do another thing. It would place the apprentice in the right attitude, and that is more than half the battle.

Another employer sees no need of a continuation or co-operative course, especially for printers; nevertheless, he emphasizes in a general way the value of co-operative training for apprentices in such a way as to indicate that he would become a ready ally to special trade training for workers in all printing trades. His remarks in regard to the age and scholarship question and the co-operative system are as follows:

What I am about to say may at first blush seem reactionary, but a careful perusal will show that it is entirely in accord with the latest developments in pedagogy, psychology and social economics. It is my firm conviction that the age limit for workers is entirely too high at sixteen. Many families can ill afford to send boys and girls to school until that age, and insist on a relatively high wage for them when they are permitted to enter shops and factories. This wage is so high that no effort is made to produce thorough, all-round mechanics, but rather specialists, who soon can earn enough to justify their remaining at the trade or employment.

It is also a fact, that by the Binet and other psychologic tests it is demonstrated that a considerable percentage of adults are found to be morons, incapable of mental development much beyond the age of twelve or fourteen. It naturally follows that legal educational requirements, which demand school attendance to the age of sixteen, either must furnish manual training or several years are being wasted, if not absolutely dangerous to the moral fabric of the individual. I believe that if boys become apprentices in trades, not dangerous, at the age of twelve, and co-operative training with the public schools could be established, the general good would be better subserved at present.

Another expresses himself as believing that

The industrial training given in the public schools should be primarily along the lines of industry which a boy or girl contemplates following. First a common-school education, then special training along lines the pupil proposes to follow. Take, for example, a boy who desires to take up typesetting. He should make a specialty of spelling, capitalization, grammar and punctuation. He should study English, literature, and should be compelled to do a certain amount of reading to familiarize himself with names, events and the Queens' English. Boys taking up electrotyping or press work should have some knowledge of chemistry and also of mechanics. They should know all about the construction of the machines they intend to handle and be able to detect any defects in the machinery.

An employer favorable to the co-operative plan says:

There is no difficulty peculiar to the printing trade that would hinder the adoption of a co-operative course. Where an office only employs one apprentice, under the co-operative plan two would be required—one attending school for a week while the other would work in the shop that same week, or vice versa. By this arrangement one of the boys would be constantly employed, and at no time would the shop be without a boy. In the school of practice—the shop—the lad would soon find in what studies he is deficient and make an effort to make up in such studies.

Two or three years of co-operative work should prepare a student for his life work and upon leaving school make him an advanced apprentice in the shop in which he has been working only part of the time. The co-operative student, after two or three years' work, should be of more value to his employer than the apprentice who did not have the advantage of special training in the public school, and, being more valuable, will receive more pay.

As an expression of what, in the opinion of a large number of employers and employees, the public school cannot do, we quote the following from the report of a survey of the apprentice system made by the United Typothetae of America in 1912:

Many professional public instructors, as well as not a few independent students of trade education, advocate the establishment of so-called "vocational" or industrial schools as a part of our public-school system, and in various localities this theory of trade training has been at least partially adopted.

Your committee has given this phase of the subject most careful study and very serious consideration, and has arrived at the conclusion held by most progressive employers, viz.: **That the technique and hand-skill of a trade must be taught where the trade is being practiced.**

This belief of your committee is likewise shared by practically all printers who have answered question twelve in our letter. Out of a total of 180, only 2 suggested that the training of printers' apprentices could be successfully accomplished through the *public schools*. Your committee emphasized this fact because the public press and many educational publications, combined with various national, state and municipal educators and officials, tend to the belief that trade training is a proper function of public-school work, as outlined in the following quotation from the Commissioner of Education of the State of New York: "It is the business of the schools to serve the masses so as to make it worth while for the people to have their children remain in school, not only until they have acquired the elements of an English education, but also such efficiency as will qualify them for some gainful vocation of the hand as much as one of the head."

The principal objection offered by intelligent employers to the above statement is that the average public school, because of the great diversity of subjects now taught or attempted, does not make it "worth while" to have the children remain in school long enough to acquire the elements of an English education. In other words, that the boys who yearly present themselves to the employers, seeking situations, are generally sadly deficient in those things that are the primal functions of the public schools, namely, the ability to think, to observe, to reason, and to give intelligent expression to the thought. What the employers of this country demand from the public schools, before trade training is attempted as a public function is a revision of present teaching methods that will hold the interest of the young boys and girls and result in graduates who can think straight, think in numbers, think in drawing, think in color, form and proportion, together with a scientific manual or vocational training that will enable the hand to give expression to the thought.

Again, public-school trade training of immature youth will simply result in turning loose a horde of cheap, inexperienced young workmen who must unlearn under practical shop conditions many of the things they supposedly learned, instead of giving to the employer a well-developed, mentally alert youth, all ready for serious trade study.

Employers and workers generally agree with the U. T. A. committee that "the technique and hand skill of a trade must be taught where the trade is being practiced," **but the committee seems to fail completely in seeing the possibility of some co-operative system wherein school and shop work together, each supplementing the other.** That will be discussed later in this report.

NUMBER OF BEGINNERS EACH YEAR.

As indicated in another part of this report, the school should train no more beginners for a given trade each year than the trade demands. An effort was made, therefore, to learn how many beginners are needed each year in Cincinnati. As answers to employers' questionnaires in regard to this question did not furnish the desired information, estimates were obtained from three persons well acquainted with the trade, one a trade-union representative, one an official of an employers' organization, and one an employer. The estimates of the trade-union representative are highest. The average of the three indicates that the trade demands annually about 35 compositors, 25 pressmen, 65 press feeders and press assistants. For detailed estimates in regard to these and other trades connected with the printing industry, see Exhibit 5.

HOW THE SHOP TRAINS BEGINNERS.

Having considered the relation of the school to the learner and to the industry, let us now consider what the shop is doing to train its workmen and wherein it fails in the performance of that duty.

The old way of learning a trade, through an apprenticeship which led the worker through a series of practical experiences resulting in an all-round workman, has about become a thing of the past.

Under our laws, no agreement can be made with a parent or guardian which is binding on the boys. With the specialization of modern business, there is no longer the need for all workmen to understand fully the various kinds of work done in an establishment. With the limitation of the variety of knowledge and skill necessary has come a reduction in the time required for a person to learn how to do his particular kind of work. Apprentices in these times do not become "all-round printers," but compositors, pressmen, press feeders, etc., as the case may be. There are few bona fide apprentices in Cincinnati shops except the small number working under agreements with the unions.

All evidence seems to indicate that as a rule a boy is permitted to learn his trade in a haphazard way. A learner is put into a certain department of the industry and he acquires only a knowledge of the particular branch at which he works. There is no attempt to give him more than an understanding of a very small part of the business. He must depend entirely for his training on the foreman and journeyman, and sometimes that is little enough. He simply picks up knowledge and experience from what he sees others do. The results of our local investigation are fully corroborated by the survey of the U. T. A., in which the members reported 1,053 apprentices as follows:

Compositors	533	Average 1 to shop.
Platen-press men	255	Average $\frac{1}{2}$ to shop.
Cylinder-press men	216	Average $\frac{2}{3}$ to shop.
Scattering	49	

Of the 496 shops, 397 reported 866 boys, of whom only 145 will have an opportunity to learn some department of the industry. The other 721 will be given no opportunity whatever.

Out of 407 U. T. A. shops, 280 give absolutely no attention to the training of apprentices, while 127 report that they give some attention, practically all by journeymen and foremen.

The U. T. A. later made a similar investigation among the shops not members of the U. T. A., and found similar results. The average of apprentices in shops not members of the U. T. A. is as follows:

Compositors	Average $\frac{7}{10}$ to shop.
Platen-press men	Average $\frac{1}{3}$ to shop.
Cylinder-press men	Average $\frac{1}{4}$ to shop.

Only 490 out of 1,119 boys employed in 573 shops will have opportunity eventually to advance to the grade of apprentice.

But a more detailed statement of how apprentices are trained may be helpful. Boys usually enter printing establishments in the capacity of errand boys, and in addition to their regular work they are occasionally allowed to assist about the presses, in this way familiarizing themselves with the general work of the shop. The length of time which a boy spends at this work will vary, depending upon the size of the shop and the attitude or ability of the boy.

When an opening occurs, one of the errand boys is selected to start in as a learner. No particular attention is paid to his fitness for the kind of work for which he is chosen, but if he prove to be not suited for the work in question he will not be retained.

If a boy be selected for the composing room, he has a variety of sub-occupations to enter. As a rule, beginners distribute type in the cases; later they may do plain reset work; finally they may be promoted to journeyman in one of the other sub-occupations. Generally, no person is chosen to operate a typesetting machine who has not at one time worked as a compositor at the case.

When a boy enters the pressroom he becomes at first a feeder, then a press assistant and finally a pressman. This is a very desirable branch of the trade, because of the many different kinds of presses now used and the many new kinds that are continually being placed on the market. The lithograph-stone pressman represents the high-grade and well-paid occupations. There is a good field for those who are familiar with offset-press work, owing to the recent introduction of this press into many new fields.

The boy who is chosen for bindery work may become a forwarder or operator of heavy machines or do other work where women are not employed. The boy who is chosen to operate a paper cutter or a folding machine is unfortunate indeed, because in this branch of the trade there is absolutely no chance for advancement.

Lithography and engraving are the two industries in which alone the present apprenticeship system seems to meet the need for skilled workmen. These two industries are well unionized in Cincinnati, and the term of apprenticeship for learners is a long one, from five to six years. A high type of workman is demanded in these trades.

In newspaper offices the situation is somewhat different from conditions in other shops. All of the newspapers in this city employ union labor exclusively and have their own special agreements with the various unions. The departments into which the newspaper offices are divided are the composing room, stereotype department, the pressroom; in some of the larger establishments there is a photo-engraving department. As the newspaper offices are all unionized,* an apprentice works under union apprentice rules. If he enters the composing room, he starts in as a galley carrier, or in some other messenger service. Apprentices are advanced according to the terms of agreement between the officers of the local unions and the newspaper office. (See copy of agreement.)

In the stereotype department the apprentice agreement also states through what routine the apprentice goes. Very little stereotyping is done outside of newspaper offices, and consequently it is a trade that is strongly unionized.

In the pressroom beginners generally start as fly boys. As much of the work in this department is of a heavy nature, the tendency is to start an apprentice at a somewhat later age than is the case in other branches. In order to be eligible as apprentice pressmen, learners must have worked four years in the pressroom under the jurisdiction of the press assistants' union. See local union agreement, Exhibit 32.

That the local situation as heretofore described is but an illustration of a condition that exists in the printing industry throughout the country is shown by the U. T. A. report, which says that **apprentice instruction, with very few exceptions, consists of simply turning the boy over to the foreman or to some workman who does or does not instruct the boy, according to his inclination or opportunity, and that such instruction when given consists of the simplest fundamentals.** The boy has no opportunity to receive advanced instruction that would possibly make him a better and more efficient workman than his journeyman teacher. In other words, the most that can possibly be hoped for under this kind of apprenticeship instruction would be to eventually have new workmen that would know as much as the old, whereas our investigation has developed a universally urgent need for better informed and more efficient workmen.

The report further says:

The employer is usually too busy with his competitors to spend much time in the instruction, even if he had the disposition to do so; so the boy is left to the tender mercies of his associates. He may fall into the hands of a man who will initiate him in his work and inspire him with a desire to perfect himself by observation and study; but such cases are exceptional. The boy himself enters upon his work without any clear idea of its nature, its difficulties or its possibilities. He has a job, and that suffices for the present. He is associated with persons older than himself and easily takes on the habits of speech and action of those about him. In many cases the taste for work which he has brought with him from school gives way to habits of indifference and idleness. He does not get inspiration from the little piece of trade taught him, soon regards his work as drudgery and so becomes an easy learner of the lessons of the street.

If the opportunities for a beginner to learn a trade in a job office or book-publishing house are limited, the chances in a newspaper office are much less.

The U. T. A. report says:

Many letters were received from newspaper owners, publishers, managers and composing-room foremen greatly lamenting the rush of business and turmoil of newspaper publication which prevented the giving of attention to this subject.

Inquiries were also made of a number of newspaper journeymen asking them if they would desire their sons to be taught the trade of compositor in their office. In each instance the workmen replied substantially that they would not want their sons taught the trade of compositor in their office because: (1) they would only half learn the trade—time was so limited; (2) newspaper composing rooms rarely attempted to train boys.

Enough has been said to indicate that the shop is failing in its duty toward the apprentice. Fortunately, a considerable number of employers are fully aware of the situation and are desirous of finding ways and means of improving it. This survey can do but little to suggest means of improvement, because neither workers nor employers have devoted much thought to the question. In this connection, however, the U. T. A. report on apprenticeship renders valuable assistance by discussing the matter at considerable length.

THE SHOP-SCHOOL.

The U. T. A. report fully acknowledges the shortcomings of employers and outlines a program of apprentice training. It points out, as has already been shown, that there is a lack of control over the boy after he leaves school and that the employer or foreman in too many cases does not give the boy that fair opportunity for rounded development which he has a right to expect. It recommends that:

1. Apprentice instruction should be a part of the daily duties of printers, and each shop should be organized to that effect.
2. Every printing office of average size should set aside at least a single frame with cases of type and a modest equipment of other material for the exclusive use of apprentices.
3. At certain hours each day the shop boys or apprentices be required to take up in this department the prescribed course of study which the committee on apprentices shall cause to be prepared.
4. In every fair-sized printing center a co-operative shop-school be established for the benefit of apprentices from shops not large enough to maintain a school.

The committee submitting the report is positive in the opinion that the shop-schools controlled by the trade, and not public-controlled schools, provide the only genuine solution of legitimate trade training. They define a shop-school as a "trade education or training department in which school instruction in trade technique and practice, combined with necessary elementary instruction consisting of mathematics, drawing, English, spelling, punctuation, color harmony, word study, composition, etc., is pursued with work at the trade."

The reasons presented for favoring the control of such a school by the trade (perhaps by employers alone) are as follows:

1. That trade instruction in public schools must be differentiated in our minds from the trade training which can be furnished in shop-schools, and that this trade instruction would furnish but part of the theory and part of the technique.

2. That the rest of the theory and the rest of the technique which is to result eventually in developing a competent craft, can only be secured through practice on actual work under trade and commercial conditions.

3. That the most effective way to give apprentice students these two divisions of instruction and training is to associate them as closely as the conditions of the particular kind of business will permit, so that the school instruction and the trade training proper may be practically simultaneous.

4. That it is unfair to the apprentice student who undertakes to learn a trade, to furnish him with less than full opportunities to perfect himself as a craftsman.

5. That it is unfair to the trade itself, or to the efficient workman now engaged in it, to turn out half-equipped workmen, who tend not only to produce a poor quality of work, but to act as improper competitors against competent workmen.

6. That the interest of our craft as a whole demands a product from trade instruction and trade training that shall be as near an all-round development of each individual in his chosen trade as is reasonably possible, to the end that those who are finally to be accepted as craftsmen in our trade may be fully capable of performing the work as it should be done.

We accept every one of these statements as being true, yet they are not arguments for trade-controlled schools. On the contrary, we believe that a public-controlled school may be so organized and conducted in co-operation with the shop that every one of these advantages—and more—will be secured.

PUBLIC-CONTROLLED SCHOOLS.

Already public-controlled schools are in successful operation in which the school and the shop share the responsibility of the apprentice; the school taking care of general culture, training for citizenship, instruction in technical matters relative to the trade and in some instances preliminary and supplementary instruction in mechanical operations, while the shop furnishes trade experiences. As examples of such successful operation, we refer to the Beverly Trade School run in co-operation with the United Shoe Machinery Co., the Philadelphia Trade School, the Munich Continuation Schools, the Cincinnati Continuation School for Machinist Apprentices.

Not only do we believe it possible for the public-controlled trade school to be so conducted as to secure all of those advantages for apprentices, but we believe that it possesses the following advantages which the trade-controlled shop-schools cannot claim:

1. It prevents the possible exploitation of the boy by the employer.

2. It prevents the training in technique and manipulative skill to

the exclusion of training in citizenship. By reference to the curriculum proposed by the committee as quoted above, we see that training for citizenship does not find a place in the work of their proposed school. The same may be said of co-operative schools already established.

3. The work of a school controlled by the trade is liable to be of the sort to meet the immediate needs of the shop rather than of the kind which will give the student that broad training which will fit him to make adjustment to the changing conditions of the trade.

4. A shop-school controlled by the employer will be distrusted by workers and by the public.

5. If left to employers and employers' associations, vocational training for the most part will not be provided.

Our conclusion is that the public-controlled school has a legitimate function which it must perform, and that it is the duty of the shop to give the apprentices full opportunity for that trade training and shop experience which can be secured best in the shop, but to leave to the school the supplementary training in technique, theory and citizenship.

Therefore, if we would determine what the school should do we need to know what a worker in a given trade should know and what of this the shop can advantageously teach him. The difference between the two will be what the school should teach.

EDUCATIONAL CONTENT.

In order to arrive at an answer to our problem, an analysis of the educational content of several occupations of the printing trade has been prepared and is here submitted. By educational content we mean those things which the workman must know in order to be a first-class workman. He may learn what he knows either (1) by observation and properly guided practice in the shops, (2) through theoretical instruction, by carefully arranged practical experiences either in the shop, or in the school: or (3) by practical experiences in the shop carelessly or improperly arranged through his lack of knowledge and because of lack of direction.

The minimum general knowledge required of workers in all the occupations in the allied printing trades is as follows:

1. Arithmetic.
 - (a) Simple counting up to five hundred.
 - (b) Simple addition in order to account for amount of work done.
 - (c) Simple multiplication.
 - (d) Practical part of a dollar, foot, inch.
2. Writing.
 - (a) Clear writing and making of figures.
3. Hygiene.
 - (a) Sufficient knowledge of the care of the body to enable workers to attain physical efficiency. This includes:
 1. Food, clothing, shelter.
 2. Personal hygiene.
 3. Sanitation.
 4. Exercise, fatigue, recreation.
 5. Health rules.
 6. Heat, light, ventilation.

4. English.
 - (a) Simple written English.
 - (b) Reading of simple English.
5. Elementary Art.
 - (a) Color sense sufficient to match tints in order to get even colored work.
6. General Intelligence.
 - (a) That enables the workers to understand directions and to make necessary adjustments for change of work.

Compositors.

In addition to general knowledge for workers in all occupations of the trade, compositors must have special training in the following:

1. Arithmetic.
 - (a) Estimating manuscript matter.
 - (b) Figuring margins.
 - (c) Paper cutting.
 - (d) Computing type—number leads.
 - (e) Determining proportions.
2. Spelling.
 - (a) Thorough, rules for same.
 - (b) Sentence structure.
 - (c) Paragraphing and composition.
 - (d) Correction of faulty English.
 - (e) Capitalization and punctuation.
 - (f) Compound words.
 - (g) Abbreviations.
 - (h) Proper word-division.
 - (i) Commercial forms.
3. Technical Knowledge.
 - (1) Hand Composition.
 - a. Type cases.
 1. California job.
 2. Yankee job.
 3. Triple job, news job, etc.
 - b. Composition.
 1. Paragraphs.
 2. Use of initial letters.
 3. Hanging indentation.
 4. Letterheads, business cards, title pages, tickets, programs, advertising, book, job, tabular.
 - c. Spacing.
 1. Spaces ordinarily used.
 2. How to justify a line of type.
 3. Uses of spaces in connection with punctuation marks and quotation marks.
 4. Spacing of lines set in capitals.
 5. Spacing of lines set in small capitals.
 6. How to end paragraphs.
 - d. Distribution.
 1. Care of cases.
 2. Care of type.
 3. Position of type in cases.
 4. Body type.
 5. Display type.
 6. Tabular forms.
 - e. Proper placing of illustrations.
 - f. Imposition, stonemen.
 1. Simple forms.
 2. From four to sixty-four page forms.
 3. Forms for folding machines.

- g. Point system.
- h. Standard sizes.
 - 1. Stock paper.
 - 2. Letterheads.
 - 3. Books, etc.
- i. Proof marks, copy-holders.
- j. Unit of measurement, the "em."
 - 1. Pica.
 - 2. Body.
- k. Composition of type.
 - 1. Composition of various papers.
- m. Plate-making of various kinds, electrotypes, half-tones.
- n. Type faces, uses.
- o. Typographical design.
 - 1. Proportion.
 - 2. Balance.
 - 3. Harmony.
 - 4. Lettering and designing.
- p. Theory of color.
 - 1. Harmony of color.
 - 2. Paper and ink.
 - 3. Relation of tints.
 - 4. Mixing of colors.

NOTE—Theory of color would be of value especially for stonemen.

- (2) Machine Composition (includes the technical knowledge required for hand compositors in addition to the following):
 - a. Position of characters on keyboard.
 - b. Temperature of metal for best results.
 - c. Composition of metal.
 - d. Effect of room temperatures on metal.
 - e. Thorough knowledge of mechanism.
 - f. Care and repair of
 - 1. Matrices.
 - 2. Space bands.
 - 3. Assembler, automatic vise, line delivery slide, friction clutch, distributor, mould disk, trimming knives.
 - g. Use of micrometer caliper.

4. Trade Knowledge.

- (a) Hand Compositors.
 - 1. Adjustment of stick for different line lengths.
 - 2. Care of tools.
 - 3. Setting type of different line lengths.
 - 4. Setting type of different points in one line.
 - 5. Setting rules and borders.
 - 6. Correct handling of stick, to insure rapid work.
 - 7. Posture and movement of arms.
 - 8. Setting type so that it can be firmly locked.
 - 9. Spacing between words in order to secure lines of equal length.
 - 10. Inserting cuts, etc.
 - 11. Methods of taking proof.
 - 12. Locking of forms to insure perfect alignment of type.
 - 13. Locking of forms to insure perfect level face.
 - 14. Locking of type to prevent type from working loose.
- (b) Machine Compositors (includes the trade knowledge required for hand compositors in addition to the following):
 - 1. Care of machines.
 - a. Cleaning.
 - b. Oiling.
 - 2. Adjustment for different type sizes.
 - 3. Adjustment for different line lengths.
 - 4. Spacing between words—indentation.

5. Mental alertness—by long practice, training of the mind in order that defects in machine operation may be noted at once.
5. Manipulative Skill (Hand and Machine Composition).
 - (a) Co-ordination of right and left hand.
 - (b) Position of body while working.
 - (c) Control of machine and tools.

Pressmen.

In addition to general knowledge for workers in all occupations of the trade, pressmen must have special training in the following:

1. Arithmetic.
 - (a) Figuring stock.
 - (b) Computing weights of paper.
 - (c) Relation of speed of press to time required for work.
2. Technical Knowledge.
 - (a) Names of presses, sizes, dimensions, parts, etc.
 - (b) Theory of color.
 1. Harmony of color.
 2. Paper and ink, absorptive qualities of paper.
 3. Relation of tints.
 4. Mixing of colors.
 5. Matching of tints in order to get even colored work.
 - (c) Elimination of static electricity.
 - (d) Standard sizes of books, letterheads, etc.
 - (e) Composition of type material.
 - (f) Composition, properties of various metals used in this work.
 - (g) Plate-making of various kinds, electrotypes, half-tones, etc.
 - (h) Type faces.
 - (i) Relation of speed of machine to
 1. Atmospheric conditions.
 2. Temperature, humidity.
 3. Ink supply, quality.
 4. Tenacity of ink.
 5. Quality of paper.
 6. Quality of finished work.
 7. Relation of speed of machine to danger of breaking.
 - (j) Relation of ink to
 1. Size of type.
 2. Number of illustrations.
 3. Position of illustrations.
 4. Quality of work.
 5. Number of rollers.
 - (k) Working up inks, uses of compounds.
 - (l) Composition of rollers, formula for same.
 - (m) Chemistry of inks.
 - (n) Quality of various inks.
 - (o) What inks work best on certain papers.
 - (p) Bronzing.
3. Trade Knowledge.
 - (a) Care of machine.
 1. Oiling.
 2. Cleaning, washing up.
 3. Care of inks.
 - (b) Putting forms on press.
 - (c) Making ready.
 1. Underlaying.
 2. Overlaying.
 3. Gauging form for gripper margin.
 4. Preparing and applying tympan on press.
 5. Adjusting grippers, guides, shooflies, etc.
 6. Registering form to sheet.

- (d) Regulating impressions for various kinds of paper and ink.
- (e) Taking proofs.
- (f) Adjusting, setting
 - 1. Fountain.
 - 2. Rollers.
 - 3. Rack.
 - 4. Cylinder, bearers, etc.
- (g) Care of rollers, cleaning.
- (h) Care in handling paper.
- (i) Feeding.
 - 1. Letterheads, cards, tickets, etc.
- (j) Adjusting automatic feeder.
- (k) Inking press while running.
- (l) Adjusting paper receiver.
- (m) Adjusting all other patent attachments.
- 4. Manipulative Skill.
 - (a) Control of machine.
 - (b) Co-ordination of right and left hand.
 - (c) Habits and methods that give best results with least physical efforts.
 - 1. Handling of stock.
 - 2. Re-inking of rollers, etc.

It is not our purpose at this point to discuss or state specifically what part of the above outline the shop should teach and what part the school should teach. That, in the main, will be determined by the kind of school which is established. In deciding this question, we can get but little assistance from the local employers, as they seem to have given the matter but little attention and they appear to be widely divided in their opinions. Of 63 firms reporting, 16 favored technical training with machinery; 9, the present night high schools; 8, continuation schools; 3, vocational schools; 2, co-operative system. Seven employers said that no school is necessary, and 18 did not attempt to answer the question.

Answers to the inquiries, "For what occupations do you believe that such schools could be provided to best advantage?" and "What should be taught in such a school?" are fully as unsatisfactory.

But when we turn to work of experts in industrial education, we find that they have worked out this problem in a way that will be helpful to us.

TWO KINDS OF SCHOOLS.

In the training of persons for the various printing trades, there are two opposing ideas represented by two different kinds of schools.

One plan contemplates teaching the trade itself in the public schools through one or two years up to a certain point and independent of the industry.

The other plan contemplates the co-operation of shop and school in the training of the boy. A school of the latter type may be co-operative half time or it may be a continuation school to which learners go for a certain period, usually one or two half-days per week to be taught the academic and theoretical side of his trade.

A school of the former type, to do justice to its students, must

be well equipped with a good line of up-to-date machinery and fixtures. A school of the latter type needs only enough machinery and fixtures for illustrative purposes, or it may be conducted without any such equipment.

These two types of schools may be illustrated by referring to the New Haven Trade School and the Philadelphia Trades School. In discussing their relative values, Dr. Frederick W. Hamilton, national apprentice director of the U. T. A., says,

Drawing a contrast, I should say of the

New Haven System:

1. That it is not closely enough related to the trade. That is to say, the students are not chosen by the printers because they possess the personal qualifications which the printer desires, but are left to find their way into the school as chance may decide, while nobody is responsible for their entrance in the trade after leaving the school, for their after-development in the industry, or for any relation between the number of boys in the school and the absorbing power of the industry. Burdens of expense and responsibility are thus thrown upon both the community and the boys which ought not to be borne by either, but properly belong to the trade.

2. It would be difficult, if not impossible, to maintain the shop conditions and shop atmosphere which are so essential to the training of the young artisans in the school.

3. The conditions which govern the appointment of teachers, and especially of trade teachers, are often, to my certain knowledge, unfortunate in their results upon the schools. It is difficult to get the right kind of teachers anyway for trade subjects and doubly difficult under school conditions.

4. It is very difficult to maintain equipment and methods at the very best shop standards, while anything inferior to these standards is distinctly mischievous.

5. It is very difficult for public schools to avoid the temptation of product. School boards, knowing that printing has a market value, are liable either to think that the school ought to support itself by its product or to burden it with public printing. To say nothing of the objections which may come from the industry itself, the underlying pedagogical objection appears in that the value of the school as an educational institution is impaired exactly to the degree that its product is considered its reason for being.

The following are the principal advantages of the

Philadelphia System:

1. The practical side of the industry is taught where it ought to be, in the shop.

2. There is an automatic adjustment between the industry and the school, as under this system the boys find their way into the continuation school from the industry itself and not from a trade school into the industry.

3. The responsibility is placed where it belongs, the shop looking after its own recruits and teaching them its operations, while the community attends to the education of young students, giving to each particular group of young students the special education which it needs.

I may sum up by saying practically all of the difficulties enumerated in connection with the New Haven system are avoided by the Philadelphia system. It is only fair to state that there is one difficulty with the Philadelphia system which must not be ignored. Under this system the employers must assume responsibility, (a) in choosing their boys; (b) for giving them their practical training. Unless they can be inspired and held to their duty, they will be only too likely to avoid these responsibilities.

The arguments above presented by Dr. Hamilton in favor of the co-operative continuation school are in accord with the report of the committee on industrial education of the American Federation of Labor, published in 1912. The report says:

In the last analysis, industrial education will be measured by intensely practical men of the industrial world on the basis of skill and intelligence as developed by these undertakings, to fit the youth of the country for wage-earning occupations. In order to **meet the test successfully, apprentices must be trained under real conditions in a productive industry, thereby making the co-operative-school plan a necessary feature of our public-school system.**

Other reasons why co-operative schools should be a public charge are as follows:

1. Because of the very nature of things, past and present, the general public has confidence in the public-school system.

2. The manufacturer ought not be expected to run his establishment to teach trades; nor can he be criticised for making "machine specialists" instead of all-round machinists, when one takes into consideration the fact that he is working to accomplish a very definite end; that is, to turn out a product.

3. **The public school should teach the theory of the trade, while the actual practice and processes should be taught in the shop.** This method permits of continuous development of capacity and relieves the manufacturer of the expense of the theoretical instruction, and provides a means of weeding out boys who are not adapted to particular trades.

4. By this method the boy, the employer and the community are benefited.

We thus see that the official representative of the United Typothetae of America and the highest authority on educational questions in the American Federation of Labor agree that "the school should train FOR the industries, but should not train IN the industries."

In discussing this question in The Apprenticeship Bulletin of the School of Printing, North End Union, Boston, a recent writer says:

The public schools may render important assistance in the better training of boys who are already apprentices. This help can best be rendered by the establishment of classes for the training of apprentices in those subjects allied to the trade which are extremely important for the craftsman, but which are not within the range of ordinary shop practice. In several cities plans are in operation under which the apprentices, while learning the practical side of the trade in the shop under competent direction, are going to the public schools for eight or ten hours per week on the employers' time for the study of English (including spelling, punctuation, paragraphing, etc.), proofreading, drawing (including principles of design and color), trade history, civics and other subjects.

Such training should be under the direction of competent teachers with trade experience, and the material should be especially arranged with reference to the needs of boys who are learning printing. This, it will be recognized, is an application of the German system of continuation training—which has had such an enormous effect in the development of German industries—to the American conditions.

CO-OPERATIVE AND CONTINUATION VS. TRADE SCHOOL.

We have herein presented arguments only in favor of a system of industrial training in which the school supplements the training

of the shop, because we have found no worthy argument in favor of the other type of school.

Furthermore, this is in accord with our experience in Cincinnati. The most popular and the most successful courses in engineering at the University of Cincinnati, the industrial courses in the high schools, the machinists' continuation school, and the school already established for printers' apprentices, are all co-operative in character. Our citizens are all familiar with this system of education and are favorable to it. Moreover, this type of schools costs a great deal less money. Because of these conditions **some form of co-operative schools for printers' apprentices would fit in better with our present system of education and would be received better by our citizens than would a trade school of any other character.**

Either or both of two types of co-operative part-time schools for learners in the printing industry would fit in well with our present system of education: (1) a half-time co-operative high-school course; (2) a continuation school at which learners would attend not to exceed two days per week. The latter should be established first, because up to the present time practically no learners in the printing industry have been recruited from the high school and there is no good reason to believe that any considerable number could afford to attend school half time. Furthermore, there is some doubt as to whether more than a very few learners in the printing industry are of the type that would profit to any great extent by a four years' high-school course.

Again, we have already the nucleus of such a school, which needs reorganization under the direction of a high-grade teacher who knows the printing industry. The school has at present only eight students, who attend school but one-half day or four hours per week. For several weeks the school has been without a teacher, and these students have been cared for by the teachers of the machinists' continuation school. The work of the school in so far as it has been developed seems to be along correct lines, but not all has been accomplished that should be expected. This is due, in a considerable degree perhaps, to the fact that an attendance of only four hours per week is entirely too little time in which to teach all that such a school should be expected to teach. The work has developed along three lines — arithmetic, English and proof-reading. No attempt has been made to furnish instruction for beginners in any other trade than that of compositor, and they have not been given all that they should receive. If the school has in a measure failed in its purpose, the fault rests largely with the employers, who were for the most part apathetic because they had no realization of its possibilities.

If the development of such a continuation school should reveal the need of a co-operative high-school course for the training of apprentices who desired training beyond what the continuation school could give, such a school could *then* be established.

NATURE AND PURPOSES OF CONTINUATION SCHOOLS.

The purposes of the German continuation schools, as expressed in the United States Bureau of Education Bulletin No. 565, might well determine the character of a printers' continuation school in America. It is as follows:

The aim of the industrial continuation school is to furnish the young apprentice or factory worker with the kind of technical and business instruction which he cannot get in the shop or factory where he is employed, but which he needs in order to ply his vocation intelligently and advance his economical well-being. Another important object of the continuation school is to give the youth instruction in language, science of government, civic and industrial affairs, trade practices, hygiene, factory sanitation, etc., that will fit him to be an intelligent citizen as well as an efficient master workman or competent employer.

What part of the educational content should be included in the curriculum of a continuation school may be determined in a general way by application of the principle already stated of division between shop and school; but any specific statement of a course of study should be worked out by the director of the school to be established in co-operation with persons connected with the industry.

EQUIPMENT FOR SCHOOL.

Closely akin to the question of the course of study is the question of equipment. It has been shown that a considerable number of local employers favor the introduction of machinery, but the national apprentice director of the U. T. A. is doubtful as to its utility. In regard to this matter, Dr. Hamilton says:

I can see no objection to a limited amount of equipment for the purpose of illustration in a school conducted on the Philadelphia plan, though I am not at all convinced of the necessity of it. On the other hand, I am afraid that if the equipment were there, there would be not only a temptation to use it on the part of the instructors and the pupils, but a pressure for its use from the outside. The Philadelphia school itself has on the premises some equipment, because it has certain classes which are given to trade instruction on the old basis. These classes are an inheritance from the time before the continuation plan was started. The director of the schools considers them of very little practical importance. Unless I am very much mistaken, absolutely no use is made of this equipment in the continuation classes, which are held in another part of the building.

It is very difficult for me to answer the question dogmatically without knowledge of a great many details which an outsider could not be expected to know. Speaking generally, however, I should advise against the purchase of equipment. I cannot help fearing that the dangers attending its presence would be greater than its advantages. This discussion is based on the ordinary type of continuation-school work. If work should be continued for a number of years and should come by and by to deal with very advanced work, some equipment might be necessary for demonstration purpose in teaching.

Dr. Hamilton's opinion is in accord with the opinion of numerous representatives of organized labor in this city, although not for

the same reason. He would oppose the use of machinery because he doubts its utility in a continuation school and because he wants to place the responsibility for a large share of *trade* training on the employer. We have reason to believe, however, that members of labor unions oppose it because they believe that it will have a tendency to increase the number entering the industry. It could not have such influence, as only beginners who had already entered the industry would be admitted to the schools. In reports received from 11 schools in which printing is taught, 4 state that the unions favor the use of machinery and 7 indicate that the unions have not opposed it.

It would appear that there is no satisfactory trade reason to prevent the introduction of machinery into a continuation school. The question, therefore, should be determined only by the educational value of such equipment, and that, perhaps, can be determined only after a careful further study of the local situation by those closely connected with the work of the school.

MORAL AND CIVIC TRAINING.

Any system of industrial school must take into consideration the question of moral and civic as well as technical training. In this connection in his lectures on continuation schools, Dr. Kerschensteiner, director of education, Munich, quotes the following from the American Federation of Labor report:

But the farther we penetrate into the question of educating the masses to industrial capacity, the more we recognize that the problem before us is not special but general; that it is in fact nothing less than the problem of educating the whole man.

In commenting on this Dr. Kerschensteiner says:

There is a growing feeling, that is gaining rapidly in strength, that in industrial education the human element must be recognized, and cannot be so disregarded as to make the future workers mere automatic machines. The one-sided education of workmen to dexterity is only an apparent solution of the problem. Of course, industry requires an army of trained men to perform their special tasks as well as it is possible to perform them. But dexterity only attains its full value when it is based on insight. And one more thing is necessary: **we require not only dexterity and insight, but also the education of the moral character.** Perhaps this development of character is the most important part even in industrial education. **Firmness and principle will lead a man to acquire dexterity and insight, but dexterity and insight are not always placed in the service of character.**

Dr. Kerschensteiner emphasizes none the less the value of civic training. In fact, the two cannot well be separated. In stating the threefold character of industrial education which the schools fail to provide fully he says:

Our present schools have not yet fully grasped the meaning of this threefold work: first, **education to skill in work and joy in work**; second, **education to readiness of service, consideration for others and loyalty to school-fellows and to the school**; third, **education to insight into the aims of the state community.** Well-organized schools fulfill the first task, the development of personal capacity. It still remains to enlarge them to schools for social services, and our most important task is to provide such schools for the masses of the population, based on training for a trade.

We cannot improve on the statement by the eminent German educator in regard to the three main purposes which should dominate the work of a school for printers' apprentices in Cincinnati.

ATTITUDE OF EMPLOYERS TOWARD PART-TIME SCHOOLS.

In our survey, an effort has been made to determine the attitude of local employers toward such a part-time day school as herein outlined. Of 62 firms reporting, 27 expressed a willingness to enter into an agreement providing for employment for a definite period of apprenticeship at a fixed scale of wages and for attendance at such a school for a definite number of hours per week; 25 said that they would not agree to such a contract, and 10 did not answer. It is highly probable that a much larger number of employers could be educated to the advantages of such a school. The occupations favored for such an agreement were those of compositor and pressman.

TIME FOR INSTRUCTION.

There is no agreement among employers whatever as to how much time per week students should attend school. They varied from four hours per week to half time in school and half time in the shop.

There is a feeling existing that one half-day per week in school is not enough. Printers' apprentices in the Munich continuation schools attend school 9 hours per week. The time for attendance in this city should not be less than 8 hours weekly. Time schedule for the Munich School for Printers' Apprentices is as follows:

Subjects of Instruction.	Hours of Instruction (per Week).					
	For Typesetters' Apprentices.			For Printers' Apprentices.		
	First Class.	Second Class.	Third and Fourth Class.	First and Second Class.	Third Class.	Fourth Class.
Religion	1	1	.....	1	.....	.....
German language, composition and reading	3	2	1	1	1	1
Mathematics and bookkeeping ..	1	1	1	1	1	1
Foreign languages .....	.....	.....	1	.....	.....	.....
Hygiene, civic and industrial history	1	1	1	1	1	1
Drawing	2	2	2	2 _a	2	2
Practical instruction in science of materials, tools and machinery	1	2	3	4	4	4
Total	9	9	9	10	9	9

As a final word on the day continuation school for the training of beginners in the printing industry, we may say that we have kept constantly in mind the co-operation of the employer with the school, not only in sending the boy to school, but in giving him full opportunity for that trade training which properly belongs to the shop. It has been shown that employers have neglected this duty, but in making our recommendation for a part-time day-school in which academic and technical subjects are taught, we go on the assumption that this condition will not continue to exist.

Employers should understand that they make the school as much as does the teacher, and failure on their part to give full opportunity to the boy in the shop might compel the adoption of less efficient means of education.

TRAINING OF JOURNEYMEN.

Important as is the training of the beginner, the opportunity for further education in the theory and technique of his work should be given to the journeyman who is ambitious to advance. **Such opportunity can be given only through night schools.**

Before considering what will be best adapted to the needs of the journeymen, we must take into consideration the kind of pupils that will attend schools of this character, the conditions under which they must work and what are their needs. This subject has been developed by Wesley A. O'Leary, of the United States Department of Labor, in a monograph on "Short Unit Courses for Evening Trade Extension and Part-Time Extension Schools." We quote from Mr. O'Leary:

The evening pupil is a wage-earner who has a family to support. Economic necessity presses hard upon him and forces him to increase to the utmost his earning capacity. He comes to the school to get something on which he can realize in his trade. He is there to buy certain instruction, as it were, exactly as he goes to the store to purchase a new and improved tool. Unless the school is prepared to do what the store does, that is, sell him the thing he wants, or if it does not have it in stock go out and find it, the school is going to fail of its purpose. . . . The time of the trade worker is limited, and the school must not waste it. . . . The school, therefore, ought to conserve his time in every possible way. This can only be done by eliminating from the course all subjects not needed as a means of increasing the pupil's trade efficiency, by so organizing the work that he can easily get what he needs and by employing the most direct and efficient methods of teaching it can command. . . .

It is characteristic of most men that they can work better on a limited task whose completion they can foresee than on a continuous one whose end is too remote to be seen. This is particularly true of the trade worker. In most skilled trades the workman is accustomed to deal with relatively small units each complete in itself. The unit may be only a part of a much larger unit and may call for countless repetitions on his part, but it is usually a definite task which he carries through to the end. . . . Whatever the unit, it tends to develop in the worker a habit of mind which enables him to work much better on a short task complete in itself than on one of long duration.

In teaching the tradesman, the school should take advantage of this fact by offering its instruction in units which in character of

content and in length appear to the pupil to be a task within his ability to complete. . . .

The limited time the pupil is under the instruction of the school makes it necessary to select in each course some one specific thing as the objective point of the work, regardless of additional knowledge which might be desirable as a trade asset. This time is too short to admit of subdivision among the various subjects of a general course, to cover every phase of the trade. . . .

To be efficient, the industrial school must study the needs of the worker, from the standpoint of the specific needs of both the individual and the industry. To learn the needs of the industry, the school must consult the employer, visit various industries, see them in operation and observe the conditions under which they are carried on. In this work both the employer and the employee can be of assistance. . . .

One method of securing the assistance and advice of practical men is that of organizing an advisory board for each trade taught in the school. This board should be made up of practical men actually engaged in the work of the industry, and should have represented on it the employer, the foreman and the employee. . . .

More important than equipment is the question of the qualifications of the teacher. The teacher in the evening industrial school should be selected from the industry, and not from the regular day-school. He should be a master of his trade in all its phases and in good standing among his fellow-craftsmen. He should be a man of good personality and in vigorous health. He should be experienced in handling men and should know how to teach them. Unless such a teacher can be obtained, the school ought not to attempt to give trade instruction. The instructors of the general evening-school, when selected, as they frequently are, from the ranks of teachers in the day-schools, are skilled in the regular school methods of teaching, but they are not familiar with the methods that must be employed to teach efficiently in the industrial school. Moreover, they are usually lacking in a practical knowledge of the trade, without which they can neither teach successfully or command the respect of the trade worker. . . .

SHORT UNIT COURSES.

To handle this problem successfully requires new methods of organization and a new type of course. . . . The type of course required, it is believed, is the short unit course. . . .

The short unit course is an intensified form of instruction which is intended to serve in a limited number of lessons a specific need of a particular group. Each unit deals with one teaching phase of the trade and is complete in itself. The subject is selected with reference to the need of the group, and not with reference to its relation to other parts of the trade.

The short unit course puts up a trade asset; it includes only what has been passed upon by men of the trade and found to be of practical value.

Courses organized as short unit courses economize the time of the pupil. This is done by eliminating all unnecessary preparatory work and all work that does not apply to the specific topics to be taught, and by arranging a flexible program that will permit the pupil to break into the work at the point of his greatest need.

Courses of this character for the printing trades are in successful operation elsewhere, and a short unit course for journeymen in the machinist and building trades has been introduced recently into the Cincinnati night-schools. **We see no reason why workers in the printing trades should not be given the same opportunity.** (See outline of short unit courses; Exhibit 27.

MANUAL TRAINING.

This report would be incomplete without some discussion of printing as a manual-training subject.

It is generally recognized that academic training only does not meet the needs of many pupils in the more advanced grades of the elementary schools. It is now understood that many children are what has been called *hand minded* and that their intellectual, as well as their manual development, is greater when a large share of their time is devoted to manual operations. An understanding of this fact has been followed by the establishment in numerous cities of what has been called pre-vocational schools, in which from one-third to one-half time is given to manual work, and in which the mental work is closely correlated with the manual. The manual or shop work in such schools is not an advanced course in manual training, nor is it a specialization in one trade. On the contrary, pupils in such schools are taught the elements of a variety of trades. The work is so arranged that it provides a great variety of experiences with many kinds of materials. In some schools of this character the work consists of actual trade processes and produces articles which have commercial value. In others it does not, but on the contrary, it may be regarded as a high-class course in scientific tinkering. In either case the work is so arranged as to develop resourcefulness and mental ability in the student and give him those experiences by which he may determine the kind of work for which he is best fitted and which may be of value to him in his later trade training.

It has been proven that such work will hold in school the child who at present finds nothing there to interest him. Parents who are as much influenced by the vocational motive as the children have their interest in the further training of the child stimulated. Since the age at which boys may leave has been extended to 15 years and girls to 16 years, the importance of this kind of a school has been greatly increased.

This work usually extends through a period of two years, the seventh and eight grades. The following trades have been found to furnish shop work for such training:

1. Building trades: carpentry, plumbing, steam and gas fitting, sheet metal, electrical construction, bricklaying, tile construction, concrete work, tile-setting, painting (house, sign and fresco), paperhanging, architectural drafting.
2. Machine trades: patternmaking, foundry work, forge work, bench and vise work, machine practice, machine drafting.
3. Furniture trades: cabinetmaking, finishing, upholstering,
4. Printing trades: typesetting, bookbinding, engraving, lithography.
5. General wood and metal work: joinery, turning, cabinet-making, patternmaking, foundry work, forge work, bench and vise work, machine practice.

The weekly time schedule for a seventh grade recommended for such a school in the Chicago City Club Report is as follows:

Subject	No. hours per week
Shop work and drawing.....	15
Shop science and shop mathematics.....	2½
Industrial geography, history and civics.....	2½
English, penmanship.....	5
General use, recesses, physical education, opening exercises, study, music.....	5

The schedules in Cincinnati schools give 4 to 7 hours per week to manual work. In one school, however, more industrial in its character, the boys spend 3 hours per day in academic work and 3 hours per day in the school woodworking shop.

It will be seen that specialization generally in any trade is not attempted, and any such attempt, before the student has reached the age of 14 or 15 years and passed through a "trying out" period, would, in considerable degree, defeat the purpose of the school, i. e., to give the student an all-round training and to furnish him with those experiences which will assist him in the selection of his life work.

In Cincinnati such pre-vocational classes are in operation in 7 schools: Oyster, Riverside, Lincoln, Guilford, Washburn, Douglas, Rothenburg.

But the testing time in which the student tries himself out through a variety of manual and mental experiences does not stop with the elementary schools. The high-school period is peculiarly a testing time, and the exercises in language, science, mathematics, social science, manual operations, etc., are the means whereby the student finds the kind of work for which he is best fitted. The manual work of the Cincinnati high schools includes cabinetwork, woodturning, patternmaking, molding, forging, machine-shop work, mechanical drawing, and, as far as facilities offer, should extend to many other lines.

Printing as Manual-Training Work.

As yet printing as a manual-training subject has not been introduced into either the high or elementary schools, and we must go out of Cincinnati to obtain the opinions of people who have had such experience in this work.

Reports have been received from 21 cities in which printing is part of the manual-training (pre-vocational) work of the public schools. The list includes Kansas City, Chicago, Portland, Ore., Lincoln, Nebr., New Haven, Bridgeport, Conn., Louisville, Holyoke, Mass., Minneapolis, Columbus, Ohio, Boston, Springfield, Mass., Buffalo, Rochester and Los Angeles. These cities report 7 high schools and 27 elementary schools in which printing is taught as a pre-vocational subject.

The elementary schools give from 1½ hours to 5 hours per week, while the high schools devote about 4 hours per week to printing as a manual training subject. The equipment of these schools varies from a single 8 x 12 press and a few fonts of type, to what is perhaps an up-to-date equipment costing from \$300 to \$5,000.

In answer to the question as to how the work in printing influences the work in academic subjects, we have the following replies:

- It gives added interest and attention (to the academic subjects).
- It helps spelling, punctuation, correct use of English.
- Good; helps spelling.
- Inspiring and brightening grammar, spelling and punctuation.
- Greatly improves accuracy and speed.
- Pupils work harder in academic work, because they can apply their knowledge to the academic work.
- Helps in English and mathematics.
- Marked improvement in English and commercial branches.
- English and designing materially helped.
- The printing is very helpful to English.
- It helps the academic work and is made the basis of much of the work in mathematics, industrial history, etc.
- Unquestionably gives an added interest to the study of English.

The principal of Holden School, Chicago says:

This work holds the interest of boys, making a larger number continue after 14 years of age and increasing the number of those completing the eighth grade. It assists in securing proper attention to academic work, which is made less extensive but accomplishes quite as much in development of power, initiative and individuality.

But the value of printing as a manual-training subject is of a broader significance than just its influence on the academic subjects. On this question we quote from a recent number of *The Apprentice Bulletin*, Indianapolis:

... There is no question that the manual-training side of public-school work in elementary schools, and even in high schools, ought to be materially strengthened. This form of training is very important for all children. It should be considered, however, as strictly educational and not vocational. It gives to children excellent preparation for their future trade training by familiarizing them with the use of tools and the manipulation of material, and it develops the power of co-ordination of brain, eye and hand which is important for everybody, and particularly important for those who are to engage in any industries which involve any form of the craftsman's skill. It also opens up the content of the various industries and enables the children to develop their tastes and capacities and "find themselves" in relation to their future life work.

Printing is one of the most valuable of these manual-training subjects. It develops a range of capacity wider than those involved in any other industrial process. On account of the character of the work and its product, it has important relations to English and to many other branches of knowledge involved in the material printed. There is no better way of fixing an impression than by immediate expression. There is no better way of learning a lesson and fixing its content in mind in correct proof, and producing it in printed form.

For this reason the use of printing in public schools as a manual training subject appears highly desirable. It is important, however, that there should be no misunderstanding as to what is being done. **The fact should never be lost sight of that this is manual-training work and not the teaching of the printing trade, and that the boy who has learned to set type and share in the production of the school paper and of the miscellaneous printed matter used by the school and its allied activities has not learned the printing trade.**

... Unquestionably, the boy who has had this manual or pre-vocational training, and through it has developed an interest in the trade while acquiring a rudimentary knowledge of its practice, makes a more promising apprentice than the boy who has not had this

preparation. Such a boy may well become a printer if he does not make the mistake of supposing that he is one already.

... It is extremely important that the schools in which printing is taught should not commercialize their work. There is always a temptation to use these school printing plants not only for the production of a special paper and the incidental printing of the schools, but also for general printing for the city, and even for the state, while in some cases which have come to the attention of the writer the school goes into the open market as a competitor for job printing of all sorts.

This practice has justly been resented by the commercial printers. It is unfair to the commercial printer, especially the smaller one, that he should be subjected to this sort of competition. While he cannot object to the doing of its own legitimate work by the school itself, he has a right to object to the exploitation of the school plant for the doing of work which he, as a citizen and taxpayer, has a right to bid on in fair competition.

But there is another and even more serious objection to the commercialization of these educational plants. The moment the school printing shop becomes commercialized its educational value is impaired if not lost. The primary object of such a plant is educational, and its work should be done with reference to the welfare of the boy and secondarily to that of the industry. The moment the plant begins to be conducted with a view to output, these other interests are sacrificed. It then becomes nothing more or less than a commercial shop, and is conducted like any other shop—with an eye single on the interests of production, thus defeating the real purpose for which the school exists.

... The ability to write good English, subject to the rules of grammar, is of paramount importance in education, and yet if there is any one subject in which the public-school pupils show a notable deficiency as measured by required standards, it is that of English.

The construction of sentences by combining words in conformity with rules is at best a difficult subject to teach, and the teacher should have every supplementary aid that will help in this work.

Up to the present time, language lessons and the writing of compositions have been the only means by which this training is given; but this is not enough. Good English requires good spelling, capitalization and the proper use of punctuation points. In writing, any one or all of these requirements can be slurred over with the pen, and the pupil can thus disguise his ignorance of these matters. The facility with which these requirements can be slighted in writing begets a slovenly habit through life. Under these conditions it is not fair to expect a busy teacher to be a critical proofreader.

Let the boy take to the case the composition he has written and set it up in type. Every word of that composition requires the deliberate selection of the different letters of which it is composed; and the separation of words or clauses by punctuation points is dependent upon an intelligent knowledge of the structure of language. Nothing but precision and accuracy is tolerated in the use of types; and when the job is done every misspelled word, every proper name set in lower case and every misuse or omission of punctuation points stares him in the face, and his own ignorance stands revealed in black and white to his teacher.

The value of printing as a means of education is not limited to this service only. Drawing is an essential part of school training. Since good printing is dependent upon the appropriate arrangement of type, artistic design, a due recognition of proper balance, and harmony of light and shade, it becomes a most important adjunct to any general course of drawing in the public school. Printing is insistent on a varied requirement of design, demanding a fresh handling in artistry or design in every piece of work taken up.

No other form of manual training can be introduced into the public schools that can be made to yield such large results in devel-

oping a clearer and better understanding of language and in giving definite value to drawing as that of printing, provided, in teaching it, emphasis is given to the literary instead of the mechanical side of the work.

Typewriting concerns itself primarily with the thought to be expressed, rather than with its appearance, except within narrow conventional lines. This is necessarily so because of the limitation of the machine.

On the other hand, composition by means of type requires not only as careful attention to details of correct text, but it admits an almost endless variety in forms of expression. A dozen persons setting up the same copy may produce results no two of which are alike.

It is this opportunity to exercise choice and to give pleasing expression in so many different kinds of ways that makes typesetting so fascinating and attractive to everyone, and that interest grows as the artistic possibilities of printing are developed and become better understood. Printing requires at every step that consideration shall be given to design, which shall be appropriate and tastefully executed.

It is these inherent qualities that make printing a particularly logical sequence to drawing as taught in our public schools.

The mechanical requirements of composition and presswork are varied and exacting, and make a valuable acquisition to the forms of motor training.

The Attitude of Unions Toward Printing as Manual Training.

Our inquiry in regard to the attitude of the unions found only one or two instances where the unions were unfriendly to printing as a manual-training subject, or where they objected to the introduction of printing machinery into the schools. On the contrary, the attitude of the unions is found to be friendly. Some of the answers in regard to the attitude of the unions toward the schools are as follows:

Gary, Ind.—“Cordial.”

Cleveland—“They encourage the work. They co-operate with us in our effort to train boys. Our evening classes are almost exclusively union printers’ boys.”

Springfield, Mass.—“Endorsed our schools and are helpful.”

Bridgeport, Conn.—“Very favorable; co-operate.”

Columbus, Ohio—“Favorably disposed.”

Portland, Ore.—“No opposition; have approved the night course.”

Detroit—“Friendly; helped to establish the school.”

Louisville—“Friendly.”

Lincoln, Neb.—“Favorable; glad to co-operate. President of printers’ union visited our shop, then sent three young men to our night school. Favor printing machinery.”

In a few cities, notably Cleveland, Springfield, Mass., Bridgeport, Conn., and Buffalo, unions already count school attendance at printing schools as a part of the period of apprenticeship, or they have expressed their willingness to do so.

In Louisville the unions choose graduates of the pre-vocational school in which printing is taught in preference to others; the principal of the school expresses it as his belief that they will soon give some credit on apprenticeship. Lincoln Neb., says: “The president of the union and some newspapers have indicated a willingness to count it.”

Recommendations as to Manual Training.

Our inquiry thus indicates that both the schools and the unions recognize the value of printing as a manual-training subject. We therefore recommend the introduction of printing as a manual-training subject into the pre-vocational classes of the elementary schools and into the high schools, for the following reasons:

1. The educational value which is involved in the printing trades.
2. The valuable reaction which work at the printing trades possesses, creating additional interest in academic studies, particularly English.
3. The assistance which such work will give to the student in the selection of a vocation.

THE TEACHER; HIS QUALIFICATIONS.

Whatever may be the kind of a school in which printing is taught, its value is determined principally by the experiences, the ideals, the character and ability of the teacher. Whether in the continuation school, the evening industrial school, or the high school, **the teacher of printing should be selected from the trade and not from the school.** He should have a fair general education, a general knowledge of the industry with a full understanding, if possible, of composition and press work. He should be experienced in handling men; he should know how to secure the most successful co-operation of both employees and students.

If, in addition to these qualifications, a man were to be found who had experience and ability as a teacher, the ideal instructor and director would have been discovered. Unfortunately, such a combination is not common. Industrial schools are, therefore, selecting from the industry the best man to be secured and attempting to train him in the work of teaching. This plan has secured better results than the plan of taking academically trained teachers and endeavoring to acquaint them with the trade.

Academic teachers may continue to teach academic subjects, but in order that those subjects be closely correlated with the shop work, such teachers should have a sympathetic attitude toward industrial education and they should have made a careful study of the industry for the purpose of closely connecting the language, the mathematics, the art work, etc., with the work of the shop.

Teachers who do not in a considerable degree meet the requirements herein indicated should not be employed to teach students who are making a speciality of printing.

AGE AND SCHOOLING LAW.

On numerous occasions during the progress of the survey, the wisdom of the present compulsory-education law has been questioned. The law of 1910 permitted children 14 years of age who had completed the fifth grade to leave school and go to work. In

1913 the law was changed extending the age limit for boys to 15 years and for girls to 16 and extending the schooling requirement for boys to the sixth grade and for girls to the seventh grade.

Not only employers, but social workers, public-school officials and teachers have expressed doubt as to the advisability of permitting the law to remain in its present form. Inquiries were sent out, which included the questions:

(1) Is the present schooling law best for the boys?

(2) Whether the age law were changed or not, would you regard a law compelling beginners to return to school for one or two days per week until 18 years of age, as desirable, provided the work of the school was directly connected with the work of the shop?

It appears that employers, with the exception of those few who believe that elementary education can be secured best entirely before entering the industry and those few who believe that a boy should work all day and secure his "supplementary education" at night, are favorable to such an agreement as indicated in the second question.

It was found that a few employers favor the present law, but the majority favor a return to the law of 1910. They say that the boy is more flexible at 14 than at 16 and that he learns the trade more readily if his apprenticeship begins at the earlier age. Furthermore, they claim that a 16-year-old boy seldom will begin at wages which they can afford to pay during the earlier period of apprenticeship, but that the 14-year-old boy will work for such wages as they can afford to pay while teaching him the trade. At best, however, we must regard the evidence and opinions of employers in this case as coming from interested parties, and it will be well to consider the evidence of persons not connected with the industry.

In this connection, no other person in Cincinnati has had opportunity to study intimately so large a number of children in their relation to industry as has Mrs. Helen Thompson Wooley, director of the child labor division of the public schools.

Mrs. Wooley says:

From our study of the children who go to work, we are in sympathy with a 15-year age limit for beginning industry. We can see no reason for making a higher age limit for girls than for boys. At 14 the children seem to be so undeveloped physically as to make a combination of school and industry unwise. Under 15, we think, the industrial training should be of the type known as pre-vocational, and should be carried on entirely within the school.

We believe firmly that the school should have some supervision over the first few years of industrial life, both to safeguard the children and to give itself the means of understanding the demands being made upon it by industry. Furthermore, we are convinced that the only way of enforcing the child-labor law is to have a law which demands close co-operation with the schools. The present law for girls is not and cannot be enforced because it contains no compulsory-education feature. If the schools are made responsible for some school attendance, then the enforcement of the law rests really with the truant officers. The law then provides a follow-up system. Otherwise the matter is left to the factory inspectors, who are always too few in number, and there is no follow-up system.

Mrs. Wooley's experience is entirely with children who leave the elementary school to go to work. She has not seen these same children in school under compulsion. Since the law no longer permits them to go to work at 14 years of age, a considerable number of this type are now in high school. In regard to them, Mr. Pliny A. Johnston, principal of Woodward High School says:

We have about 100 children in Woodward High School who would probably be better off at work, i. e., work for part time. I believe that the best way to employ them for part time would be to adopt the co-operative half time system so that the manufacturers might have a boy or girl for full time. There is really no demand for children for one-half time each day. It is an artificial demand or an attempt on the part of the manufacturer to accommodate the schools. The boys or girls do not get the run of the business if they are there in one-half day stints. If they are there for full time, for a week at a time, even though part of their time would not be fully occupied, they become more familiar with the business. I believe the one-half time system to be the best solution of the problem for the children, the employers and the parents.

But let us turn to the broader view of the general administrative officer. In reply to the inquiry, Dr. Randall J. Condon, superintendent of public schools, called attention to the enrollment and age of children in the elementary schools during the school year 1912-13, the year before the present law became effective.

Dr. Condon shows that in that year there were 4,895 pupils enrolled in the fifth grade and 2,518 in the eighth grade, a difference of 2,377; that there were 4,252 pupils 13 years of age, and 2,313, 16 years of age, a difference of 1,939. This indicates a loss of practically 2,000 pupils over 14 years of age during the last three years of the elementary-school course. Under the present law the great majority, perhaps three-fourths or more, comprising the approximate loss of 2,000 from the last three grades of the elementary schools, are now in school. Only those boys more than 15 years of age still have opportunity to leave school. Of further significance is the retardation in the sixth, seventh and eighth grades. There were in that year (1912-13) more than 3,600 pupils in the last three grades over 14 years of age more than one year behind their grade; and 1,250 more than two years behind their grade. (See Exhibit 21.) A careful study of the needs of these children who formerly left school at 14 years of age, but who, because of the present law, are in school, has led Dr. Condon to make the following statement:

While I cannot say absolutely as to how many pupils there are in the last years of the elementary school for whom some special industrial training should be provided, I believe it a reasonable statement to say that there are at least 3,000 pupils between the ages of 14 and 16 years for whom the present elementary schools do not make adequate provision. It is clear to me that, in order to meet the needs of these young people, the 2,000 who leave school between these ages and the 1,250 who, remaining in school, are two or more years behind their grades, we must make a radical change in our present plans of education. This I believe can best be done by an elementary co-operative course which has in it a large amount of motor activity and which makes a direct and vital connection be-

tween work and study, school, shop, store and home. All of these over-age children between the ages of 14 and 16, who need and desire to go to work as soon as the law will permit, should have an opportunity for such a combination of work and study, one-half the time in school and one-half at work in the chosen vocation.

For pupils who do not desire or need to engage in actual occupations, there should be full-time school courses that have in them a large element of manual work.

These co-operative courses should also be extended to such pupils between the ages of 16 and 18, with more time given to the actual work and a smaller share to school. I am not speaking now of the pupils of normal age who remain in school voluntarily and who are looking forward to high school and college courses; but of these pupils who are slow and backward, who are leaving school, and who are filling the poorly paid and non-promoting industries. Their needs must be met and can be by such a plan as I have indicated above.

It matters little whether you call such a plan a continuation school, a part-time school or a co-operative course, the essential features are the same; namely, that the children should not be allowed to separate themselves from school, but, remaining in school and under the direction of the school authorities, should be allowed to enter industries that have in them educational possibilities and that are properly safeguarded—the work and study going on side by side, each interpreting and applying the other; and that part of the teaching from the school side should be related directly to the vocation, giving a general intelligence and a specific education for the work in which the pupil is engaged and for which he wishes to prepare, and a part to be of a more general nature not directly relating to the vocation. This I believe to be absolutely necessary if we are to reach and help this large number of young people whose interests are now almost entirely overlooked or, at least, whose needs are unmet.

I am aware, however, that there would be considerable objection to a change of the present law which would make it possible for children 14 years of age to go to work even for half time. I, therefore, should not urge it, but would feel that we had made an important advance if the age limit for full-time school attendance were placed at 15 years of age for girls as well as for boys, and such a system of education as I have outlined were established for both.

It would appear, from Superintendent Condon's statement and from interviews with numerous school people, that the chief difficulty with the present law is that it lacks the flexibility necessary to take care of individual cases. Among the children of the industrial type may be found a considerable number whose development would be better if their education were continued on a part-time basis between school and shop. Again, as has been shown by investigations in several cities, from 20 per cent to 25 per cent of the children who leave school between 14 and 16 years of age do so because of economic necessity. Dr. Condon's plan will take care of both classes, but will keep in school all but such special cases and give to them that combination of manual and academic training which is so necessary for their development.

We agree with him in regard to the age limit of compulsory school attendance, but doubt whether a return to the 14-year limit, even with modifications, could be secured, because of the strong opposition with which such a plan would perhaps meet. We are inclined to believe, however, that if the age limit be fixed at 15,

with a sixth or seventh grade qualification for full-time attendance and with provisions for part-time attendance in special courses to 18 years, that children who had completed the eighth grade should be permitted to change from full-time to half-time attendance at 14 years.

Such a combination of school and work to the eighteenth year we believe would do much to establish some form of vocational training which would in a great measure take the place of the apprentice system.

From Mrs. Wooley's letter we get the recommendation for the amendment of the child-labor law which, if adopted, would lead to a better supervision of children in industry.

In view of the experience of school authorities in this city, it appears that the following suggestions are worthy of careful consideration:

1. Amend the present compulsory-attendance law so as to make it possible for boards of education to compel full-time attendance for both boys and girls to 15 years of age and half-time attendance for children who have not completed the eighth grade, with a combination of work and school to 16 years of age, except that children between 14 and 15 years of age who have completed the eighth grade may be permitted to devote half time to work and half time to school.
2. Establish for children under 16 years of age who are permitted to go to work half-time courses in which the academic work is closely related to the work of the shop.
3. Amend the present law so as to give the school control of youth in industry until 18 years of age.
4. Make the public-school authorities, through the work-certificate office, truancy department and continuation schools, in a great measure, or perhaps entirely, responsible for the enforcement of the child-labor law.
5. Develop the work of the full-time courses in which half time is devoted to manual work so as to furnish opportunity for all children who need such training.

APPRENTICESHIP AGREEMENTS.

In any system of co-operative education, there should be provided an agreement between the shop and the school, and another between the apprentice represented by his parents or guardian and the employer. In connection with several trades in Chicago, where continuation schools are well developed (such schools were started in 1902) agreements of this character are general.

For the following statement we are indebted to Mr. W. M. Roberts, assistant superintendent of Chicago public schools, at the St. Paul meeting of the National Educational Association in 1914:

Attendance at school of apprentices from union shops is in accordance with agreements made between the unions and organiza-

tions of employers. With few exceptions, no deductions are made from apprentices' wages for the time spent in school. The first of these agreements, made in 1902, was between the joint board of arbitration of the carpenters' union and the employing contractors, and the superintendent of schools. Since then the plan has been growing in favor and has been extended to numerous trades, including plumbers, sheet metal workers, machinists, electricians, etc. The unions require attendance of apprentices at school and in most cases enforce obedience to regulations by withholding the working card. The carpenters add two days to apprentices' time for each day's absence from school; they also withhold cards in cases of insubordination or failure to do required work. Other unions have similar methods of enforcing attendance and good conduct. (See Exhibit 27.)

Some unions, in an effort to restore the apprenticeship system, are insisting upon an agreement which will require the employer to teach apprentices a trade or so much of it as is conducted in his business.

But unless apprentices are required to stand an examination at the close of their apprenticeship, such agreements would be ineffective; and where students attend continuation school during the period of apprenticeship, admission to the trade should be based in part upon certificates issued by the school.

Where students come from non-union shops, arrangements are made between the public schools and employers only; but in all such cases there should be regular apprentice indenture contracts between employers and parents or guardian, in which the employer obligates himself to teach the boy his trade and permit him to attend school without loss of pay.

In discussing this question, Mr. Roberts expresses it as his opinion that the Chicago system needs two supplementary provisions. There should be provided some oversight over the boy to see that he has a fair opportunity to learn the trade, and, inasmuch as boys may not enter the trade before they are 16 years of age, some opportunity should be provided for supplementary training before entering the trade. The chief objection to the latter provision is that the boy has no assurance that he will be taken into the trade as an apprentice. But this could be overcome by the union's requiring the pre-apprentice course as a part of its apprentice regulations. Mr. Roberts thinks that this could be brought about best by having the apprentice agreements provide that preference be given to boys who have given some time in school to the preliminary study of their trade. One union of electrical workers already has begun to work out this plan.

The co-operative department of the Providence (Rhode Island) high school and the manufacturing establishments of that city are also working under an agreement. (See Exhibit No. 25.) In Providence the shop agrees to accept a certain number of apprentices each year; to supply apprentices with work and instruction of such a nature as will facilitate their becoming competent workmen; to have the shop open at all times for the inspection of school officials designated for that work, and to maintain proper sanitary conditions and adequate provisions for safety of pupils. Student apprentices are not dismissed without the approval of the school officials, but for cause they may be suspended until investigation is made. The shop submits all forms of contract for apprentices in regard to hours of work, vacations, rates of wages, length of

apprenticeship, etc., to the school officials for their approval. Agreements between the school and shop may be cancelled by either party at the end of any school year by giving three months' notice.

No such agreements are in existence in Cincinnati at the present time, either in connection with the co-operative high-school courses or in connection with the continuation schools. Two arguments have been presented against them: (1) an apprentice agreement will sometimes prevent a capable boy who develops aspirations beyond what the trade offers from realizing them; (2) an apprentice agreement fixes the minimum rate of pay and this becomes the maximum, thus preventing the capable apprentice from obtaining as much as he otherwise might receive.

With regard to a few high-school students, the first argument might be applicable, but we believe that the instance would seldom, if ever, occur wherein an aspiring student would be prevented by an agreement from achieving his ambitions. With regard to continuation-school students, it is probable that such a condition would arise so infrequently as to be worthy of little consideration.

As to the second objection, we are not certain that a satisfactory apprentice agreement could be drawn with a variable wage scale to be determined by the ability of the apprentice; but be that as it may, the most important thing is that the boy should have the best possible opportunity to learn to do well the work connected with the vocation of his choice.

But, fully appreciating the objections presented, we believe that such agreements should be made to prevent the possible exploitation of the boy, to impress the employer with his obligations and to hold that boy to a steady course of useful work.

We do not believe it to be desirable in this report to state in detail the nature of such agreements, either between the shop and the school or between the employer and the apprentice, but submit the following points as being fundamental:

1. Continuation-school-student apprentices to attend school 4 to 8 hours per week; high-school-student apprentices to attend school half time.
2. Employers to teach the apprentices the trade.
3. School officials to exercise some oversight over the boy while in the shop.
4. Shops to maintain proper sanitary conditions and adequate safety provisions for pupils.
5. The work of the school to be considered if apprentices are to stand examination before becoming journeymen.
6. Continuation-school students to attend school without loss of pay.
7. Student apprentices to be dismissed only after full understanding between the school authorities and the shop.
8. The form of apprentice agreement to meet the approval of the school authorities.
9. Agreements between the school and the shop to be cancelled after due notice by either party.

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Exhibit No. 1.

EMPLOYERS' QUESTIONNAIRE—VOCATIONAL SURVEY OF THE PRINTING TRADES, CINCINNATI CHAMBER OF COMMERCE.

NOTE.—All information furnished in this questionnaire will be held strictly confidential and used only for the purpose of determining the kind of industrial education which will best meet the needs of persons engaged in the printing trades in Cincinnati.

INSTRUCTIONS.—Please fill in all blanks and return as soon as possible to C. R. Hebble, Director of the Vocational Survey, Chamber of Commerce, Cincinnati, Ohio. Where space for reply is insufficient, please give information by letter referring to the number of question answered.

1. Name of firm. Date.
2. What are your specialties?
3. To what extent did the total number of your employees (other than office help) vary in 1913? Maximum in service. Minimum in service.
4. Is difficulty experienced in obtaining efficient workers? If so, in what occupations? To what do you attribute this difficulty?
5. Are promotions frequently made in your establishment from one occupation to another?
6. What is the usual line of promotion in your establishment?
7. Are untrained beginners wanted? In what occupations can you use them?

Conditions Under Which the Work Is Performed.

8. What occupations involve peculiar physical or nervous strain?
9. What occupations involve peculiarly unhealthy conditions?
10. What occupations stimulate the intelligence of the worker?
11. What occupations narrow and restrict mental and manual development?
12. What, if any, unwholesome moral influences are to be guarded against?

How Workers Are Trained.

13. Does the worker receive any instruction or training in your establishment more than what he can pick up on the job? If so, who gives it to him?
14. What work in your establishment can be acquired with little or no instruction?
15. What are the terms of any agreements of apprenticeship you may have?
16. What is the difference in relation to the shop between those who are apprenticed and those who are not?
17. Do you find that those who are apprenticed have a better attitude toward their work than those who are not?

Relation of Occupation to School Training.

18. In what ways have you found the industry hampered by a lack of knowledge on the part of beginners? What knowledge which beginners should have is most frequently lacking?
19. In what occupations, if any, is general school training beyond the eighth grade of value?
20. Would experience seem to indicate that a complete high-school course is of advantage? If so, for what occupations?
21. What kind of a school would most help workers in the various printing trades during the apprenticeship period? For which occupations

do you believe that such schools could be provided to best advantage? In your opinion, what should be taught in such a school?

22. If a part-time day school were established, in your opinion how many hours per week should an apprentice attend?

23. If a part-time day school were established, would you, as an employer, be willing to enter into an agreement providing for employment for a definite period of apprenticeship at a fixed scale of wages and for attendance of apprentices at such a school for a definite number of hours each week? For what occupations would you enter into such an agreement?

24. For which occupations do you believe such an agreement would be most valuable?

25. In your opinion, what should the schools do for the worker before he begins to learn his trade?

26. What do you believe a night school should teach to help a journeyman who wants to advance in his trade?

Remarks.

In addition to the above questions a blank form, headed, "Please fill in blanks below for all occupations represented in your establishment," was submitted. On this blank were designated twenty-seven of the printing trades, with requests for information as to: (1) Number now employed, male, female; (2) range of weekly wage scale, male, female; (3) beginning wage; (4) usual wage second year; (5) regular hours of labor per day; (6) beginners employed in 1913, number, number between ages 16 and 18, number still employed; (7) age at which beginners usually enter; (8) preferred age for beginners to enter; (9) period of apprenticeship; (10) age at beginning of apprenticeship; (11) qualities demanded in a worker for each occupation, intelligence, accuracy, patience, strength, color sense, endurance, keenness of sight, dexterity, artistic feeling.

Exhibit No. 2.

EMPLOYEES' QUESTIONNAIRE—AN ANALYSIS OF THE PRINTING TRADES FOR THE PURPOSE OF DETERMINING WHAT KIND OF SCHOOL TRAINING WILL MOST BENEFIT THE WORKER.

NOTE.—All information furnished on this sheet will be held strictly confidential and is to be used only for the purpose of determining the kind of industrial education which will best meet the needs of persons engaged in the printing trades in Cincinnati. Where space for reply is insufficient, please give information on the other side of this sheet referring to the number of question answered.

1. Name. Union or non-union.
2. Name of employer.
3. Mention here, in order, different occupations at which you have worked in the printing trades. How long did you stay at this work? Mention here, in order, different jobs you have had, not connected with the printing trades. How long did you stay at this work?
4. What is your present occupation?
5. How many years in the printing business?
6. How many weeks did you lose in 1913 (except through sickness)?
7. How many hours constitute a week's work? How many hours on Saturday? Your present weekly wages (do not include overtime).
8. Age at which you began to learn the trade. Age at which you believe beginners should begin. Why?
9. Does your work involve any peculiar physical or nervous strain?
10. Does your work involve any especially unhealthy conditions?
11. How long did it take you to learn the trade?
12. In how many shops did you work while learning your trade? If you changed your place of employment several times while learning your trade, what were your reasons for changing?
13. Check those qualities demanded of a worker in your trade: Endurance, dexterity, accuracy, patience, color sense, strength, artistic feeling, special intelligence, keenness of sight.
14. While learning your trade, did you receive the proper co-operation of your fellow-employees and foreman or were you compelled to pick up the trade without instruction or help from them?
15. If you did not receive proper co-operation, whose fault was it, that of your employers, your foreman or your fellow-workmen?
16. At what age did you leave school? What grade did you reach?
17. In what ways have you found yourself hampered by a lack of knowledge or school training?
18. What education have you had since leaving school? Kind of school, name of school, course taken, did you complete course?, why did you select this course?, cost, who paid for tuition?, how much increase in wages or other benefits did you derive from said course?
19. Is any high-school training at all of value in your occupation? Would a complete high-school course be of advantage?
20. In your opinion what should the school do to help the worker in your trade before he begins to learn the trade?
21. What do you think a part-time school could teach him to advantage during his apprenticeship?

Exhibit No. 3.

QUESTIONNAIRE SENT TO SCHOOLS IN OTHER CITIES.

1. What is the nature of your school? Is it a pre-vocational, with printing as a part of the manual work for seventh and eighth grades, a high school, a trade school or a continuation school?
2. How much time per week do students give to printing?
3. If academic work is given, what is the influence of the work in printing on academic work?
4. If the school is a pre-vocational one, to what extent does the work of the school assist boys in the choice of a vocation?
5. What is the attitude of the local union toward the school?
6. In what other manual work, if any, do students in this school engage?
7. Is your school a part-time or a full-time school? If a part-time school, how many hours per week do students attend?
8. Briefly indicate the work for each term. If you have printed course of study, please send copy.
9. What equipment has the school in the way of type, presses, etc.?
10. Do the local unions favor or oppose the introduction of machinery into the school?
11. Do the local unions count attendance at school as a part of the periods of apprenticeship? Explain.
12. What agreement have you with employers or unions in regard to apprentices?

Exhibit No. 4.

ESTIMATED NUMBER OF WORKERS IN OCCUPATIONS OF THE ALLIED PRINTING TRADES, CINCINNATI, OHIO.

Occupations.	Estimate No. 1.	Estimate No. 2.	Estimate No. 3.
Hand typographers, monotype and linotype operators, proof-readers, make-up men, stone hands	1,300	1,200	1,000
Pressmen, web, rotary, platen, cylinder, etc.	450	500	400
Press helpers and feeders	600	700	600
Electrotypers	75	150	135
Stereotypers	50	75	35
Photo-engravers, artist	30	. . . . .	. . . . .
Photo-engravers, mechanical	75	. . . . .	. . . . .
Photo-engravers, both artist and mechanical	105	125	100
Bookbinders, hand and machine	700	500	500
Rulers	40	50	25
Paper-cutters	125	150	150
Litho engravers	40	. . . . .	. . . . .
Litho pressmen	35	. . . . .	. . . . .
Litho designers	50	. . . . .	. . . . .
Litho transferers	20	. . . . .	. . . . .
Litho press feeders	50	. . . . .	. . . . .
Total of employees	3,445	3,450	2,945
Litho workers	195	. . . . .	. . . . .

NOTE—Estimate 1 was made by an officer of an organization of employers; Estimate No. 2 was made by a member of one of the unions; Estimate No. 3 was made by an employing printer.

Exhibit No. 5.

ESTIMATED NUMBER OF WORKERS REQUIRED EACH YEAR IN
VARIOUS OCCUPATIONS OF THE ALLIED PRINT-
ING TRADES, CINCINNATI, OHIO.

Occupation.	Estimate No. 1.	Estimate No. 2.	Estimate No. 3.
Hand compositors, monotype and linotype operators, proof-readers, make-up men, stone hands	50	20	40
Pressmen, web, rotary, platen, cylinder, etc....	40	8	20
Press helpers and feeders, job-press feeders	120	30	50
Electrotypers	6	4	.....
Stereotypers	4	3	.....
Photo-engravers, artist and mechanical	6	3	.....
Bookbinders	15	5	.....
Rulers	3	3	.....
Paper-cutters	6	3	12
Litho engravers .....	.....	2	.....
Litho pressmen .....	.....	2	.....
Litho designers .....	.....	3	.....
Litho transferers .....	.....	1	.....
Litho press feeders .....	.....	4	.....

Note.—Estimate No. 1 was given by a member of the local union; Estimates Nos. 2 and 3 were given by employing printers.

Exhibit No. 6.

NUMBER OF FIRMS, WITH NUMBER OF WORKERS REPRESENTED AND MAXIMUM AND MINIMUM NUMBER EMPLOYED, CINCINNATI, OHIO.

Compiled from Reports of Employers, Cincinnati Survey.

Specialty.	Number Firms.	Number Workers			In Service 1913.	
		Male.	Female.	Total.	Maximum	Minimum
Edition printers and binders	2	224	133	357	388	379
General printing	25	605	72	677	694	632
Publishers	3	167	4	171	194	189
Job printers	13	53	2	55	66	50
Lithographers	4	114	2	116	120	115
Machine composition	1	4	0	4	7	4
Job binders	1	4	5	9	9	9
Engravers	1	8	0	8	17	14
Rulers	1	12	4	16	15	16
Special	11	509	106	615	895	718
Total	62	1,700	328	2,028	2,406	2,125

Exhibit No. 7.

QUALITIES DEMANDED OF WORKERS IN THE VARIOUS OCCUPATIONS.

Compiled from Employers' Questionnaire.

Occupation.	Intelligence.	Accuracy.	Patience.	Strength.	Color Sense.	Endurance.	Keeness of Sight.	Dexterity.	Artistic Feeling.
Compositor	*	*	*	.	*	.	.	*	*
Linotype operator	*	*	*	.	.	*	.	.	.
Monotype operator	*	*	*	.	.	*	.	*	.
Monotype caster	*	*	*	*	.	*	*	*	*
Stoneman	*	*	*	*	*	*	*	*	*
Proof-reader	*	*	*	.	.	*	*	.	.
Press feeder	*	*	.	.	*	*	.	.	*
Pressman	*	*	*	.	.	.	*	.	*

Exhibit No. 8.
WAGE CONDITIONS, ALLIED PRINTING TRADES, CINCINNATI, OHIO.
 Compiled from Reports of Employers and Employees, Cincinnati Survey.

Occupation.	Union Conditions.									
	Apprentices.					Journeyman.	Newspapers.		Open Shop.	
	First Year.	Second Year.	Third Year.	Fourth Year.	Fifth Year.		Morning.	Evening.	Male.	Female.
Hand compositors.....	†	†	†	*	.....	\$21.00	\$30.00	\$27.00	\$ 4.00-\$28.00	.....
Monotype operators.....	†	†	†	*	.....	25.00	30.00	27.00	10.00- 29.00	.....
Linotype operators.....	†	†	†	*	.....	25.00	30.00	27.00	19.00- 29.00	.....
Proof-readers.....	†	†	†	*	.....	21.00	30.00	27.00	18.00- 27.00	\$ 6.00-\$18.00
Make-up men.....	†	†	†	*	.....	.....	30.00	27.00	25.00- 32.00	.....
Stonehands.....	†	†	†	*	.....	.....	.....	.....	18.00- 25.00	.....
Pressmen, cylinder.....	\$17.00	\$18.50	\$20.00	*	.....	22.00-\$26.00	.....	.....	18.00- 28.50	.....
Pressmen, perfecting.....	17.00	18.50	20.00	*	.....	22.00	.....	.....	15.00- 20.00	.....
Pressmen, rotary.....	17.00	18.50	20.00	*	.....	24.00- 28.00	.....	.....	25.00- 32.00	.....
Pressmen, web.....	17.00	18.50	20.00	*	.....	.....	27.75	.....	12.00- 18.00	.....
Pressmen, platen.....	†	†	†	*	.....	14.50- 19.50	.....	.....	10.00- 19.00	.....
Press assistants.....	†	†	†	†	.....	12.50- 22.50	21.00	.....	.....	.....
Press feeders.....	†	†	†	†	.....	.....	.....	.....	.....	.....
Electrotypers.....	†	1.30	† 1.55	† 2.05	.....	20.00- 23.00	.....	.....	6.00- 27.50	.....
Stereotypers.....	†	1.30	† 1.55	† 2.30	†\$2.55	24.00	24.00	24.75	13.50- 20.00	.....
Photo-engravers, artist.....	.....	.....	.....	.....	.....	25.00	26.00	.....	3.00- 33.00	.....
Photo-engravers, mechan.....	.....	.....	.....	.....	.....	.....	.....	.....	3.00- 24.00	.....
Bookbinders, hand.....	.....	.....	.....	.....	.....	15.00- 21.00	.....	.....	10.00- 25.00	5.00
Bookbinders, machine.....	.....	.....	.....	.....	.....	15.00- 21.00	.....	.....	12.00- 25.00	6.00- 12.00
Rulers.....	.....	.....	.....	.....	.....	18.00- 21.00	.....	.....	10.00- 20.00	.....
Paper-cutters.....	.....	.....	.....	.....	.....	16.50- 19.50	.....	.....	12.00- 19.00	8.00- 10.00
Litho engravers.....	.....	.....	.....	.....	.....	25.00	.....	.....	25.00- 30.00	.....
Litho pressmen.....	.....	.....	.....	.....	.....	30.00	.....	.....	25.00	.....
Litho designers.....	.....	.....	.....	.....	.....	25.00	.....	.....	.....	.....
Litho transferers.....	.....	.....	.....	.....	.....	35.00	.....	.....	.....	.....
Litho fly-boy.....	.....	.....	.....	.....	.....	10.00	.....	.....	23.00- 25.00	.....
									5.00- 6.00	.....

* Apprentices under the jurisdiction of the typographical union, except on newspaper work, shall be paid as follows: Wages paid for first three years, up to employer. The last year apprentice shall receive two-thirds journeyman wages. On newspaper work apprentices shall be paid as follows: first year, one-fourth journeyman wages; second year, one-third; third year, one-half; fourth year, two-thirds. Night scale, \$2.50 in excess of day scale for journeymen. Journeymen wages at end of fourth year.
 † No agreement.
 ‡ Per day.

Exhibit No. 9.

RECAPITULATION OF EMPLOYERS' QUESTIONNAIRES.

Question No. 4:

- (a) Is difficulty experienced in getting efficient workers?
35 report yes.
3 report some difficulty.
18 report no information.
- (b) If so, in what occupations?
3 report all occupations.
17 report compositors.
16 report pressmen.
8 report feeders.
3 report machine operators.
1 reports binders.
1 reports artists.
1 reports engravers.
1 reports transferers.
1 reports cutters.
1 reports rulers.
2 report music compositors.
1 reports those occupations controlled by labor union.
7 report no difficulty in any of the occupations.
12 reports no information.
- (c) To what do you attribute this difficulty?
7 report specialization of work.
6 report workmen deficient in school training.
4 report workmen incompetent—do not stick.
1 reports entrance age limit too high.
2 report no good apprentice system.
3 report influence of labor unions.
3 report beginners expect too much pay.
2 report wages small—do not attract efficient men.
1 reports according to shop conditions.
1 reports number of small shops.
3 report not enough learning the trade.
3 report lack of interest on part of workmen.
1 reports newspapers get best men by paying high wages.
1 reports lack of proper training.
20 report no information.

Question No. 5:

Are promotions frequently made in your establishment from one occupation to another?

- 21 report yes.
31 report no.
3 report not often.
7 report no information.

Note. It is the opinion of the investigator that the employers reporting promotions made in their establishments did not mean that promotions were made from one department to another. The only department where promotions may be made is in the pressroom, where press feeders are promoted to be pressmen.

Question No. 6:

What is the usual line of promotion in your shop?

- 11 report apprentice to journeyman.
1 reports according to the ability of the employee.
9 report feeders to pressmen.
1 reports promotion according to union rules.
39 report no information.

Question No. 7:

(a) Are untrained beginners wanted?

29 report yes.

31 report no.

1 reports beginners employed according to union rules.

9 report no information.

Note. The employers reporting that untrained beginners were wanted did so because in their opinion learners are compelled to start somewhere. Those employers reporting "no" were the smaller shops which on account of their size must have experienced men.

(b) In what occupations can you use them?

15 report all departments.

5 report compositors.

5 report pressmen.

2 report feeders.

1 reports helpers.

1 reports binders.

3 report errand boys.

1 reports artists.

4 report none.

23 report no information.

Question No. 8:

What occupations involve peculiar physical or nervous strain?

1 reports stereotyper.

4 report linotype.

3 report compositor.

1 reports monotype.

4 report feeder.

35 report no strain.

11 report no information.

Question No. 9:

What occupations involve peculiarly unhealthy conditions?

1 reports machine composition.

48 report no unhealthy conditions.

12 report no information.

Question No. 10:

What occupations stimulate the intelligence of the worker?

33 report compositor.

11 report all occupations.

9 report pressman.

4 report machine composition.

2 report binder.

2 report none, it seems.

1 reports editor.

1 reports stereotyper.

1 reports proof-reader.

1 reports designer.

3 report up to individual.

9 report no information.

Question No. 11:

What occupations narrow and restrict mental and manual development?

7 report feeding.

41 report none of the occupations.

13 report no information.

Question No. 12:

What, if any, unwholesome moral influences are to be guarded against?

1 reports drinking when off duty.

1 reports cigarettes.

31 report no unwholesome moral influences.
28 report no information.

Question No. 13:

- (a) Does the worker receive any instruction or training in your establishment more than what he can pick up on the job?
50 report yes.
5 report no.
5 report no information.
- (b) If so, who gives it to him?
41 report foremen.
10 report journeymen.
10 report no information.

Question No. 14:

What work in your establishment can be acquired with little or no instruction?

30 report none.
19 report press and machine feeding.
4 report typesetting.
2 report folding.
2 report taking proofs.
3 report bindery work.
2 report paper cutting.
1 reports mailing.
8 report no information.

Question No. 15:

What are the terms of any agreements of apprenticeship you may have?

45 report no agreement with apprentices.
8 report apprenticeship agreement with unions.
1 reports union agreement in composing room.
2 report 4 to 5 years, increase wages every 6 months.
1 report agrees to teach learner typesetting.
6 report no information.

Note. None of the shops in this city with the exception of a few working under agreement with unions make any agreement with the boy who enters the printing shop.

Question No. 16:

What is the difference in the relation to the shop, between those who are apprenticed and those who are not?

35 report no difference.
3 report apprentices have better prospects.
23 report no information.

Note. Those firms reporting that apprentices have a better attitude toward their work are union shops.

Question No. 17:

Do you find that those who are apprenticed have a better attitude toward their work than those who are not?

35 report no difference.
7 report apprentices have better attitude.
23 report no information.

Note. Those firms reporting that apprentices have better attitude are shops working under agreement with the local unions.

Question No. 18:

(a) In what ways have you found the industry hampered by lack of knowledge on the part of beginners?

27 report common-school education.
12 report general intelligence.

- 1 reports beginners are too old.
- 2 reports carelessness on part of workmen.
- (b) What knowledge which beginners should have is most frequently lacking?
 - 22 report spelling.
 - 14 report punctuation.
 - 13 report grammar.
 - 11 report reading.
 - 11 report writing.
 - 9 report arithmetic.
 - 7 report capitalization.
 - 5 report English.
 - 3 report mental ability.
 - 2 report ambition necessary for success
 - 1 reports artistic ability.
 - 1 reports discipline.
 - 1 reports drawing.
 - 1 reports designing.
 - 1 reports general common school subjects.
 - 1 reports mechanics.
 - 1 reports make-ready.
 - 6 report no information.

Question No. 19:

In what occupations, if any, is general school training beyond the eighth grade of value?

- 23 report none of the occupations.
- 19 report compositor.
- 5 report all of the occupations.
- 1 reports proof-reader.
- 1 reports foremen only.
- 1 reports all except feeding.
- 1 reports pressmen.
- 1 reports drawing.
- 1 reports designer.
- 1 reports transferer.
- 1 reports art-school education.
- 12 report no information.

Question No. 20:

- (a) Would experience seem to indicate that a complete high-school course is of advantage?
 - 36 report not necessary.
 - 20 report yes.
 - 1 reports yes for editors.
 - 5 reports no information.
- (b) If so, for what occupations?
 - 19 report compositors.
 - 5 report proof-readers.
 - 3 report machine compositors.
 - 2 report all.
 - 1 reports pressman.
 - 1 reports transferer.

Question No. 21:

- (a) What kind of a school would most help workers in the various printing trades during the apprenticeship period?
 - 15 report technical with machinery.
 - 9 report present night schools.
 - 6 report continuation school O. K.

- 6 report none necessary.
 - 3 report vocational.
 - 2 report co-operative.
 - 1 reports eighth grade education sufficient.
 - 1 reports teach boy the trade before he enters shop.
 - 2 report continuation with practical training.
 - 18 report no information.
- (b) For what occupations do you believe such schools could be provided for to best advantage?
- 20 report compositors.
 - 11 report pressmen.
 - 9 report all occupations.
 - 4 report binders.
 - 2 report proof-readers.
 - 2 report none.
 - 1 reports lithographers.
 - 1 reports ad writers.
 - 9 report no information.
- (c) In your opinion what should be taught in such schools?
- 17 report general trade knowledge.
 - 12 report spelling.
 - 10 report arithmetic.
 - 9 report grammar.
 - 9 report reading.
 - 9 report writing.
 - 4 report English.
 - 3 report punctuation.
 - 3 report design.
 - 3 report art.
 - 2 report composition.
 - 1 reports proof-reading.
 - 1 reports chemistry.
 - 1 reports history.
 - 1 reports geography.
 - 1 reports binding.
 - 1 reports capitalization.
 - 1 reports concentration.
 - 26 report no information.

Question No. 22:

If a part-time day school were established, in your opinion, how many hours per week should an apprentice attend?

- 5 report 2 half days.
- 4 report half school, half work.
- 2 report 1 week work, 1 week school.
- 2 report 1 half day per week.
- 1 reports 12 hours per week.
- 1 reports 4 hours per week.
- 1 reports 1 day work; 5 days school.
- 1 reports 1 hour per day.
- 1 reports 2 hours per day.
- 1 reports 4 to 6 hours per week.
- 1 reports 8 hours per week.
- 5 report do not approve part-time schools.
- 36 report no information.

Question No. 23:

- (a) If a part-time school were established would you, as an employer, be willing to enter into agreement providing for employment for a definite period of apprenticeship at a fixed scale of wages and for attendance of apprentices at such a school for a definite number of hours each week?

- 26 report yes.
- 25 report no.
- 1 reports yes for alternate weeks.
- 10 report no information.

(b) For what occupations would you enter such agreement?

- 19 report compositors.
- 8 report pressmen.
- 2 report proof-readers.
- 1 reports offset pressmen.
- 1 reports machine composition.
- 1 reports ad men.
- 1 reports binders.
- 1 reports engravers.
- 1 reports rulers.
- 5 report all occupations.
- 7 report none.
- 2 report none—shop too small.
- 25 report no information.

Question No. 24:

For what occupations do you believe such an agreement would be most valuable?

- 20 report compositors.
- 2 report proof-readers.
- 10 report pressmen.
- 2 report machine composition.
- 4 report all.
- 1 reports binder.
- 1 reports engraver.
- 5 report none.
- 1 reports ad men.
- 25 report no information.

Question No. 25:

In your opinion, what should the schools do for the worker before he begins to learn a trade?

- 19 report ordinary eighth grade education sufficient.
- 3 report train student to think.
- 2 report teach fundamentals of the trade.
- 2 report teach essential academic subjects.
- 1 report determine vocation for which boy is fitted.
- 1 reports night school attendance.
- 3 report insist on boys passing the eighth grade.
- 1 reports teach relation of employee to employer.
- 23 report no information.

Exhibit No. 10.

QUOTATIONS FROM EMPLOYERS' RETURNS.

"It would practically be impossible to give part of each day to a co-operative or other school, but a certain number of boys and girls might spend alternate weeks at work and at school, the numbers being so balanced that the work would not suffer."

"We believe that, could the boys be taught in school before coming to our office, to respect their employers, have staying qualities and to know that they are fitted for the business, there would be no use for any part-day schools, provided they have had an ordinary grammar-school education. The **average** printer will not send his apprentices to school, pay them wages for going and then have this same apprentice leave him when he is efficient. We need to improve the quality of the boy **before** he enters the workshop."

"Part-time day schools of no value unless apprentice begins work at the age of 12 years—at age of 16 must pay too high wage to give off time for further education which would be acquired at present night school."

"So very few who have attended high school ever worked in the printing trade, that there is no data. Our continuation school is very valuable and a purely technical school looks desirable. Teach such academic subjects as are essential and give him a sound view of the relations of employer and employee."

"Have found that the present continuation school with only few hours per week a benefit to the one apprentice I have."

"Have been running a night linotype school since December 1st. They learn in an hour under instruction what they would pick up in a month if left to themselves."

"I have sent two of my boys to the continuation school four days a week, from four to five. I approve of this work for the last hours of the working day."

"Present continuation school is no good. Boys do not get enough schooling there to assist in any way. Night school is bad because boys cannot work all day and then go to school. Give boys education before allowing them to work."

"Need more **common** schooling, but high school not good for them. Good knowledge of spelling, punctuation, rules of grammar, and ordinary knowledge of arithmetic most frequently lacking. The greatest thing the schools could do would be to stimulate the boys' desire to master a trade thoroughly and not drift about from job to job. Education is not as essential as a desire to learn, and the indifference of the average boy is the greatest detriment. Keep away from organizations until he is a competent journeyman, as they are his greatest detriment."

Exhibit No. 11.

RECAPITULATION OF EMPLOYEES' QUESTIONNAIRES.

A—COMPOSITORS.

Question No. 3:

- (a) Name occupations at which you worked in the printing trades.
17 men worked as compositors only.
8 men worked as press operators.
7 men worked as feeders.
1 man worked as cutter.
- (b) Length of time men worked before entering printing trades.
3 men worked 1 year.
2 men worked 2 years.
1 man worked 3 years.
1 man worked 5 years.
1 man worked 11 years.

Question No. 5:

How many years in the printing business?

- 2 men reported 3.
2 men reported 4.
3 men reported 8.
3 men reported 9.
2 men reported 10.
4 men reported 11.
2 men reported 12.
1 man reported 13.
1 man reported 14.
1 man reported 15.
3 men reported 16.
1 man reported 17.
1 man reported 19.
1 man reported 20.
1 man reported 21.
1 man reported 25.
1 man reported 37.
2 men reported 24.
1 man reported 30.
2 men reported 40.

Question No. 6:

How many weeks did you lose in 1913, except through sickness?

- 19 reported no time lost.
4 reported 1 week lost.
2 reported 2 weeks lost.
2 reported 3 weeks lost.
1 reported 4 weeks lost.
1 reported 5 weeks lost.
1 reported 13 weeks lost.
1 reported 16 weeks lost.
1 reported 6 months lost.

Question No. 7:

How many hours constitute a week's work? Saturdays?
(Weeks).

- 22 report 54 hours.
6 report 48 hours.
5 report 52 hours.
1 report 50 hours.
1 report 53 hours.
1 report 60 hours.

(Saturdays).

- 14 report 5¼ hours.
- 11 report 5 hours.
- 5 report 4½ hours.
- 4 report 4 hours.
- 1 report 4¾ hours.

Question No. 8:

Age at which you began to learn the trade.

- 11 report 16 years.
- 8 report 14 years.
- 4 report 15 years.
- 3 report 13 years.
- 3 report 18 years.
- 2 report 17 years.
- 2 report 19 years.
- 1 report 11 years.
- 1 report 12 years.
- 1 report 20 years.

Age at which you believe beginners should begin.

- 15 chose 16 years.
- 8 chose 18 years.
- 3 chose 17 years.
- 2 chose 15 years.
- 2 chose 19 years.
- 1 chose 13 years.
- 1 chose 14 years.
- 1 chose 20 years.
- 3 gave no information.

Reasons for selecting certain ages for beginners.

- 4 men chose 16-20 years because more matured journeymen when of age.
- 4 men chose 18-20 because a good education is required.
- 3 men chose 14-16 because printing is education itself.
- 6 men chose 16-17 because it is legal age and also because of proper schooling.
- 3 men chose 15-16-17 because at these ages boys will take orders better and are more industrious.
- 1 man chose 12-14 years because beginners should learn while young.
- 1 man was of the opinion that shop conditions regulated the age.

Question No. 9:

Does your work involve any peculiar physical or nervous strain?

- 12 report no strain.
- 8 report yes.
- 5 report eye strain.
- 5 report nervous strain.
- 6 gave no information.

Question No. 10:

Does your work involve any especially unhealthy conditions?

- 22 report no unhealthy conditions.
- 4 report yes.
- 4 report type dust.
- 1 report lack of ventilation.
- 5 report no information.

Question No. 11:

How long did it take you to learn the trade?

- 13 report 4 years.
- 11 report still learning.
- 5 report 3 years.
- 4 report 5 years.
- 1 report 2½ years.
- 2 report no information.

Question No. 12:

In how many shops did you work while learning the trade?

- 17 report 1 shop.
- 9 report 2 shops.
- 5 report 3 shops.
- 2 report 4 shops.
- 1 report 5 shops.
- 1 report 12 shops.
- 1 report no information.

Question No. 13:

Reasons for changing.

- 9 report better conditions.
- 3 report more money.
- 1 report printers' strike.
- 6 gave no information.

Question No. 14:

While learning the trade, did you receive the proper co-operation of your fellow-employees and foreman, or were you compelled to pick up the trade without any instruction or help from them?

- 15 report proper co-operation received.
- 9 report compelled to pick up the trade.
- 8 gave no information.

Question No. 15:

If you did not receive proper co-operation, whose fault was it, that of your employers, your foreman, or your fellow workmen?

- 4 report fault due to foremen.
- 3 report fault due to all.
- 1 report fault due to fellow-workmen.

Question No. 16:

At what age did you leave school?

- 13 left school at 14 years.
- 7 left school at 13 years.
- 5 left school at 15 years.
- 4 left school at 16 years.
- 2 left school at 19 years.
- 1 left school at 12 years.
- 1 left school at 18 years.
- 11 gave no information.

What grade did you reach?

- 10 reached the eighth grade.
- 9 reached the sixth grade.
- 9 reached the seventh grade.
- 2 reached the second high school.
- 1 reached the third high school.
- 1 reached the fourth high school.
- 1 reached through high school.
- 3 gave no information.

Question No. 17:

In what ways have you found yourself hampered by lack of knowledge or school training?

- 9 reported not hampered in any way.
- 4 reported deficient in spelling.
- 4 reported deficient in grammar.
- 2 reported deficient in arithmetic.
- 1 reported deficient in punctuation.
- 1 reported deficient in proof-reading.
- 1 reported deficient in artistic training.
- 19 gave no information.

Question No. 18:

What education have you had since leaving school?

- 13 report none.
- 5 report general reading.
- 1 report special.
- 1 report printers'school, Y. M. C. A. two courses.
- 1 report night school, I. C. S. accounting.
- 1 report commercial school.
- 1 report night O. M. I.
- 1 report night high, academic.

Question No. 19:

Is any high-school training at all of value in your occupation?

- 25 report yes.
- 7 report no.
- 4 gave no information.

Would a complete high school course be of advantage?

- 22 report yes.
- 8 report no.
- 6 gave no information.

Question No. 20:

What in your opinion should the schools do to assist the worker before entering the trade?

- 19 suggest teaching spelling.
- 13 suggest teaching grammar.
- 8 suggest teaching arithmetic.
- 8 suggest teaching punctuation.
- 5 suggest teaching reading.
- 2 suggest teaching art.
- 2 suggest teaching composition.
- 1 suggests teaching Latin.
- 1 suggests teaching literature.
- 1 suggests teaching history of printing.
- 1 suggests teaching design.
- 3 favor vocational training.
- 3 consider general training necessary.

B—MACHINE OPERATORS.

Question No. 3:

Different occupations at which men worked in the printing trades.

- 3 worked on machine composition only.
- 2 worked as compositor, feeder, pressmen.
- 1 worked as compositor—simplex machine.
- 1 worked as compositor—copy holder.
- 2 gave no information.

Length of time men worked before entering printing trades.

- 1 man worked 3 months.
- 1 man worked 1 year.
- 1 man worked 2 years.
- 1 man worked 3 years.
- 1 man worked 4 years.

Question No. 5:

How many years in the printing business?

- 1 man worked 1 year.
- 1 man worked 6 years.
- 1 man worked 9 years.
- 1 man worked 10 years.
- 1 man worked 12 years.
- 1 man worked 19 years.
- 1 man worked 23 years.
- 2 men worked 13 years.
- 3 men worked 18 years.

Question No. 6:

How many weeks did you lose in 1913, except through sickness?

- 10 reported no time lost.
- 1 reported 3 days lost.
- 1 reported 1 week lost.
- 1 reported 20 weeks lost.

Question No. 7:

How many hours constitute a week's work? Saturday's?

(Weeks).

- 9 reported 48 hours.
- 4 reported 54 hours.
- 1 reported 52 hours.

(Saturday).

- 6 report 4 hours.
- 5 report 5 hours.
- 1 report $4\frac{1}{2}$ hours.
- 1 report $5\frac{1}{4}$ hours.
- 1 report $4\frac{2}{3}$ hours.

Question No. 8:

Age at which you began to learn trade.

- 3 report 14 years.
- 3 report 15 years.
- 2 report 17 years.
- 2 report 18 years.
- 1 report 16 years.
- 1 report 19 years.
- 1 report 22 years.

Age at which you believe beginners should begin.

- 4 chose 16 years.
- 2 chose 17 years.
- 4 chose 18 years.
- 2 gave no information.
- 1 chose 21 years.

Reasons for selecting certain ages for beginners to begin.

- 4 gave no information.
- 2 chose 16 years because mind is adaptable to impression.
- 1 man chose 16 years because the boy then has had a common school education.

- 3 men chose 18 years because they believe that the boy should get a good education.
1 man chose 18 years because of his belief that a boy can learn better while young.
1 man chose 21 years because he believes that the boy should have a good education.

Question No. 9:

Does your work involve any peculiar physical or nervous strain?

- 6 reported yes.
3 reported no.
4 gave no information.

Question No. 10:

Does your work involve any unhealthy conditions?

- 6 reported no.
4 reported odor of metal.
3 gave no information.

Question No. 11:

How long did it take you to learn the trade?

- 3 reported 4 years.
3 reported 5 years.
3 reported 4½ years.
1 reported still learning.
1 gave no information.

Question No. 12:

In how many shops did you work while learning the trade?

- 6 reported 1 shop only.
1 reported 2 shops.
1 reported 3 shops.
1 reported 4 shops.

Question No. 13:

While learning the trade did you receive proper co-operation and if not whose fault was it?

- 7 reported co-operation received.
2 reported little received.
3 gave no information.

Question No. 16:

At what age did you leave school?

- 4 left school at 14 years.
2 left school at 17 years.
1 left school at 18 years.
1 left school at 16 years.
1 left school at 15 years.
5 left school at 13 years.
1 left school at 12 years.
1 gave no information.

What grade did you reach?

- 4 reached the eighth grade.
3 reached the ninth grade.
1 reached the twelfth grade.
1 reached the seventh grade.
2 gave no information.

Question No. 17:

In what ways have you found yourself hampered by lack of knowledge or school training?

- 2 reported not hampered.
- 1 reported deficient in spelling and punctuation.
- 1 reported lack of advancement.
- 9 gave no information.

Question No. 18:

What education have you had since leaving school?

- 4 reported none.
- 2 home reading.
- 1 reported 2 years' night high school.
- 1 reported commercial night school.
- 1 reported art and English.
- 1 reported grammar and economics.
- 1 reported architecture O. M. I.
- 1 reported 3 years night high school.
- 2 gave no information.

Question No. 19:

Is any high-school training of value?

- 10 men reported yes.
- 1 man reported not necessary.
- 2 gave no information.

Would a complete course be of advantage?

- 8 reported yes.
- 3 reported no.
- 2 reported no information.

Question No. 20:

What should the schools do to help the worker in the trade before he begins to learn the trade?

- 2 suggest teaching mathematics.
- 2 suggest teaching grammar.
- 3 suggest teaching punctuation.
- 2 suggest teaching English.
- 2 suggest teaching reading.
- 3 suggest teaching general training.
- 4 suggest teaching artistic training.
- 4 gave no information.

Question No. 21:

What do you think a part-time school could teach a learner to advantage during his apprenticeship?

- 4 recommend spelling.
- 3 recommend mathematics.
- 5 recommend grammar.
- 4 recommend punctuation.
- 4 recommend English.
- 1 recommends keyboard manipulation.
- 1 recommends general training.
- 1 recommends proof marks and their meaning.
- 1 recommends bookkeeping.
- 1 recommends type sizes—choice of faces.
- 1 recommends practical part of business.

C—PRESSMEN.

Question No. 3:

Different occupations at which men worked in the printing trade.

35 reported feeder, helper to pressman.

5 reported feeder to pressman.

1 reported all-round work.

1 reported bindery work—pressman.

(b) Number of years men worked at jobs not connected with the printing trades.

6 reported 2 years.

4 reported 1 year.

1 reported 3 years.

1 reported 4 years.

1 reported 6 years.

1 reported 10 years.

Question No. 5:

How many years in the printing business?

1 reported 5 years.

2 reported 7 years.

2 reported 8 years.

1 reported 9 years.

1 reported 11 years.

2 reported 12 years.

1 reported 13 years.

3 reported 14 years.

5 reported 15 years.

1 reported 16 years.

2 reported 17 years.

1 reported 19 years.

2 reported 21 years.

2 reported 22 years.

3 reported 24 years.

1 reported 25 years.

1 reported 28 years.

3 reported 30 years.

1 reported 31 years.

3 reported 33 years.

1 reported 37 years.

1 reported 43 years.

1 reported 47 years.

1 reported no information.

Question No. 6:

How many weeks did you lose in 1913, except through sickness?

4 report 4 weeks lost.

18 report no time lost.

3 report 3 weeks lost.

3 report 2 weeks lost.

2 report 1 week lost.

1 report 5 weeks lost.

1 report 6 weeks lost.

1 report 12 weeks lost.

9 report no information.

Note. 17 of the pressmen furnishing data were employees of one firm. During the flood in the spring 1913 this company was compelled to discontinue business owing to the delay in paper deliveries. This accounts for much of the time reported as lost.

Question No. 7:

How many hours constitute a week's work? Saturday's?

(Week)

- 24 reported 48 hours.
- 10 reported 54 hours.
- 6 reported 50 hours.
- 1 reported 52 hours.
- 1 reported 55 hours.

(Saturday)

- 17 reported 4¼ hours.
- 7 reported 5 hours.
- 6 reported 5¼ hours.
- 4 reported 4:50 hours.
- 1 reported 4:55 hours.
- 1 reported 4:40 hours.

Question No. 8:

Age at which you began to learn the trade.

- 9 reported 15 years.
- 7 reported 16 years.
- 5 reported 14 years.
- 4 reported 18 years.
- 3 reported 17 years.
- 2 reported 20 years.
- 1 reported 13 years.
- 1 reported 19 years.
- 1 reported 22 years.
- 1 reported 23 years.
- 8 gave no information.

Age at which you believe beginners should begin.

- 18 chose 16 years.
- 6 chose 18 years.
- 4 chose 17 years.
- 2 chose 19 years.
- 2 chose 20 years.
- 1 chose 22 years.
- 9 gave no information.

Reasons for selecting certain ages for beginners.

- 4 men chose 16 because the boy will be a journeyman when of age.
- 3 men chose 16 because the boy can acquire additional knowledge later.
- 3 men chose 16 because the boy must get a common school education.
- 2 men chose 18-21 because apprentice will become better interested in the work.
- 2 men chose 18 years because indoor work is hard for the young boy.
- 1 man chose 16 because the boy must have strength.
- 1 man chose 22 because the mind is developed at that age.
- 1 man chose 18 because the apprentice would then be through the intermediate school.
- 1 man chose 18 because he thinks boys should go through high school.
- 1 man chose 18 because the mind is then more mature.
- 1 man chose 20 because more interest is taken in the work at that age.
- 1 man chose 19 because of the danger of machinery.
- 20 men gave no information.

Question No. 9:

Does your work involve any peculiar physical or nervous strain?

- 16 reported no.
- 8 reported yes.
- 7 reported strain on eyes.
- 2 reported nervous strain.
- 1 reported strain from lifting.
- 8 gave no information.

Question No. 10:

Does your work involve any especially unhealthy conditions?

- 26 report no unhealthy conditions.
- 2 report yes.
- 2 report vapor and odor from fumes unhealthy.
- 1 reported heat.
- 1 reported lack of ventilation.
- 9 report no information.

Question No. 11:

How long did it take you to learn the trade?

- 10 report 4 years.
- 8 report still learning.
- 5 report 3 years.
- 3 report 6 years.
- 2 report 5 years.
- 1 report 1½ years.
- 1 report 8 years.
- 12 gave no information.

Question No. 12:

In how many shops did you work while learning the trade?

- 18 report 1 shop only.
- 4 report 2 shops.
- 6 report 3 shops.
- 5 report 4 shops.
- 1 report 6 shops.
- 8 report no information.

Reasons for changing:

- 4 report better chances.
- 2 report more money.
- 2 report to learn methods.
- 1 reported fire.
- 6 gave no information.

Question No. 14:

While learning the trade, did you receive proper co-operation from your fellow-workmen and foreman, or were you compelled to pick up the trade without instruction or help from them?

- 15 report proper co-operation received.
- 10 report no co-operation; compelled to pick up the trade
- 17 report no information.

Question No. 15:

If you did not receive proper co-operation, whose fault was it, your employer's, foremen or your fellow-workmen?

- 3 report fault of individual workman himself.
- 3 report fault of foreman.
- 1 report fault of fellow-workmen.
- 35 gave no information.

Question No. 16:

At what age did you leave school?

- 18 left at 14 years.
- 7 left at 15 years.
- 6 left at 16 years.
- 1 left at 12 years.
- 1 left at 18 years.
- 1 left at 19 years.
- 1 gave no information.

What grade did you reach?

- 9 reached seventh grade.
- 8 reached sixth grade.
- 6 reached ninth grade.
- 5 reached eighth grade.
- 3 reached fourth grade.
- 2 reached fifth grade.
- 2 reached tenth grade.
- 7 report no information.

Question No. 17:

In what ways have you found yourself hampered by lack of knowledge or school training?

- 22 report not hampered.
- 11 report deficient in English.
- 1 report deficient in spelling.
- 18 report no information.

Question No. 18:

What education have you had since leaving school?

- 25 report no additional education.
- 2 report night school, Y. M. C. A.
- 1 report I. C. S. English course and night high school.
- 1 report graduate night high school.
- 1 report shorthand, typewriting.
- 1 report home reading.
- 1 report Night High School English, Latin, algebra.
- 10 report no information.

Question No. 19:

Is any high school training at all of value in your occupation?

- 19 report yes.
- 13 report no.
- 10 gave no information.

Would complete high school course be of advantage?

- 17 report yes.
- 14 report no.
- 11 gave no information.

Question No. 20:

In your opinion what should the schools do to help the worker in trade before he begins to learn the trade?

- 5 suggest teaching spelling.
- 5 suggest teaching arithmetic.
- 5 suggest teaching color sense.
- 2 suggest teaching vocation.
- 2 suggest teaching English.
- 1 suggest teaching drawing.
- 1 suggest teaching reading.

- 1 suggest teaching grammar.
- 1 suggest teaching punctuation.
- 1 thinks present school methods O. K.
- 4 suggest installation of equipment and trade training.
- 2 emphasize the development of general knowledge.

Question No. 21:

What do you think a part-time school could teach to advantage to an apprentice during the period of apprenticeship?

- 2 suggest spelling.
- 1 suggests arithmetic.
- 1 suggests hygiene.
- 1 suggests drawing.
- 1 suggests color sense.
- 3 think actual experience is best teacher.
- 1 thinks ambition counts most.
- 1 favors part-time schools for the last year.
- 1 thinks press feeding would be an important subject.
- 25 gave no report.

D.—PRESS FEEDERS.

Question| No. 3:

Different occupations at which men worked in the printing trades?

- 14 worked as press feeders only.
- 1 worked as stock boy and paper cutter.
- 2 worked in composing room.
- 1 worked as fly boy and breaker.

Number of years men worked at other trades before entering the printing business.

- 1 worked 3 months.
- 1 worked 1½ years.
- 2 worked 2½ years.
- 1 worked 3 years.

Question No. 5:

How many years in printing business?

- 1 reported 2 years.
- 3 reported 3 years.
- 2 reported 4 years.
- 3 reported 5 years.
- 3 reported 6 years.
- 2 reported 7 years.
- 2 reported 8 years.
- 1 reported 9 years.
- 1 reported 11 years.
- 1 reported 12 years.

Question No. 6:

How many weeks did you lose in 1913, except through sickness?

- 10 reported no time lost.
- 2 reported 4 weeks.
- 2 reported 3 weeks.
- 1 reported 3 days.
- 4 gave no information.

Question No. 7:

How many hours constitute a week's work? Saturdays?

(Week)

11 reported 48 hours.
2 report 53 hours.
2 report 52 hours.
1 report 55 hours.
1 report 54 hours.
1 report 53½ hours.
1 report 45 hours (night).

(Saturday)

8 report 4 hours.
3 report 4:55 hours.
1 report 4½ hours.
1 report 4:40 hours.
1 report 4:45 hours.
1 report 4¼ hours.
1 report 8½ hours.

Question No. 8:

Age at which you began to learn the trade.

9 reported 16 years.
2 reported 15 years.
2 reported 18 years.
1 reported 14 years.
1 reported 17 years.
1 reported 19 years.

Age at which you believe beginners should begin.

12 men chose 16 years.
4 men chose 17 years.
3 men gave no information.

Reasons for selecting certain ages for beginners.

2 men chose 16-17 because apprentices would know trade when of age.
1 man chose 16 because apprentice should have strength.
1 man chose 16 because he does not believe in child labor.
1 man chose 16 because of better chance for advancement.

Question No. 9:

Does your work involve any especially unhealthy conditions?

10 reported none.
4 reported inhaling ink and paper dust harmful.
2 reported improper ventilation causing excess heat.
3 gave no information.

Question No. 10:

Does your work involve any peculiar nervous or physical strain?

2 reported strain on eye and shoulder.
2 reported strain on eyes.
8 reported no strain.
1 reported strain from heavy lifting.
6 gave no information.

Question No. 11:

How long did it take you to learn the trade?

8 reported still learning.
2 reported 4 years.

- 2 reported 2 years.
- 1 reported 5 years.
- 1 reported 6 months.
- 5 reported no information.

Question No. 12:

In how many shops did you work while learning your trade?

- 4 reported 1 shop only.
- 3 reported 2 shops.
- 4 reported 3 shops.
- 2 reported 5 shops.
- 1 reported 6 shops.
- 1 reported 4 shops.
- 4 gave no information.

Reasons for changing.

- 4 reported better chances.
- 2 reported more money.
- 13 gave no information.

Question No. 14:

While learning the trade, did you receive proper co-operation and if not whose fault was it?

- 10 reported co-operation received.
- 3 reported none received.
- 2 reported compelled to pick up the trade.
- 1 blamed foreman and himself.
- 6 gave no information.

Question No. 16:

At what age did you leave school?

- 2 reported 13 years.
- 7 reported 14 years.
- 3 reported 15 years.
- 6 reported 16 years.
- 1 reported 17 years.

What grade did you reach?

- 1 reached the fourth grade.
- 2 reached the fifth grade.
- 2 reached the sixth grade.
- 2 reached the seventh grade.
- 9 reached the eighth grade.
- 3 reached the tenth grade.

Question No. 17:

In what ways have you found yourself hampered by lack of knowledge or school training?

- 7 reported they were not hampered.
- 12 gave no information.

Question No. 18:

What education have you had since leaving school?

- 12 reported no additional education.
- 1 reported night commercial course Y. M. C. A.
- 1 reported night course, 2 years at business college.
- 5 gave no information.

Question No. 19:

Would any high school training be of value?

- 7 reported yes.
- 9 reported no.
- 3 gave no information.

Would a complete high school course be of value?

- 7 reported yes.
- 7 reported no.
- 1 reported one or two years.
- 1 reported some value.
- 3 gave no information.

Question No. 20:

What should the school do to help the worker in the trade before he enters the trade?

- 1 suggests teaching accuracy.
- 1 suggests teaching all-round training.
- 3 suggests teaching reading.
- 2 suggests teaching writing.
- 2 suggests teaching spelling.
- 2 suggests teaching grammar.
- 2 suggests teaching arithmetic.
- 2 suggests teaching color sense.
- 2 suggests teaching keenness of sight.
- 12 gave no information.

Question No. 21:

What could a part-time school teach him to advantage during his apprenticeship?

- 2 reported shop experience would be best.
- 17 gave no information.

Exhibit No. 12.

DESCRIPTION OF OCCUPATIONS.

A—COMPOSITOR.

The copy is handed the foreman of the composing room with corrected directions regarding same. These directions are the result of interviews between the superintendent or foremen of the shop and the party who is ordering the job. Printing offices as a rule have well-established systems for handling the orders, and it is usual for customers when dealing with reputable printers to leave nearly all the details to them. It is their business, and they will, if allowed, pursue a consistent and uniform plan.

The compositors who are to set the type are selected according to the difficulty of the matter in hand. The successful compositor should be a person sufficiently adaptable to meet all conditions that he may meet in the execution of his work, because it usually falls to the lot of the compositor to be called upon to set all sorts of difficult work. As a rule, the average compositor follows copy, and this custom has shown what little education some of the men who are called journeymen compositors now have, for they will follow incorrect copy without seeing the errors in spelling, punctuation, etc.

On small jobs, where the type faces to be used are not specified on the order, the foreman or manager will as a rule make such a selection as, in his opinion, will produce a neat and artistic job. The foreman then explains what is required to the journeyman, who proceeds to set up the type. Care must be taken to get the best results on the first proof, because it is of utmost importance to produce a job that will be accepted by the customer when the first proof is submitted, as it is expensive to make changes.

In order to show the usual routine of work through the composing room, we will take for example the printing of a book which has been ordered directly by the author.

When the compositor has finished his work, the type is passed to a workman who locks it up on a galley—a flat brass tray with upright sides on which the compositor has placed the type—and takes the proof of it upon the galley or roller press. This is the proof known as the galley proof and is printed on a strip of paper large enough so that there is a generous margin to accommodate proof-readers' and the author's marks, alterations or additions.

The galley proof, with the corresponding copy, is then handed the proof-reader, who is assisted by a copy-holder (an assistant who reads the copy aloud) in comparing it with the manuscript and marking, upon the margin, the typographical errors and departures from the copy. Thence the proof passes back again to the compositor, who corrects the type in accordance with the proof-reader's markings.

New proofs are taken of the corrected galley, and these are again revised by the proof-reader, in order to be sure that the compositor has made all corrections and to mark anew any he may have overlooked or wrongly altered. If many such occur, the proof is again passed to the compositor for further correction, and the taking of fresh proof follows. The reviser, having found the proof reasonably correct and having marked on its margin any noticed errors remaining, and also having drawn the attention of the author to any doubtful points to which it is desired that the latter's attention should be called, the proof and manuscript are sent to the author for his reading and correction or alteration.

On the return of the galley proof to the printer, the changes indicated on the margins are made by compositors selected for the purpose, and the galley of type and the proofs are then turned over by them to the make-up. The make-up inserts the cuts, divides the matter into page lengths, and adds the running titles and folios at the heads of the pages.

At this stage the separate types composing the page are held in place and together by a strong twine called page cord, which is wound around the whole page several times, the end being so tucked in at the corner as

to prevent its becoming unfastened prematurely. The page thus held together is quite secure against being "pied" if proper care is exercised in handling it, and it can be put on a hand press and excellent proof readily taken from it. A loosely tied page, however, may allow the letters to spread apart at the ends of the lines or the type to get off its feet, or may show a line slightly curved or letters out of alignment.

Proofs of these twine-bound pages are taken on a hand press, passed to the reviser for comparison with the galley proof returned by the author, and if the latter has expressed a wish to see a second revision of the proofs, they are again sent to him. Usually the author does not require to see another proof after the second revision, which he returns to the printer with his final changes and the directions that the pages may be corrected and cast, i. e., put into the permanent form of electrotype plates.

The author having given the order to cast, the pages of type are laid on the smooth, level table of iron or marble called the imposing stone. They are then enclosed in iron frames called chases, in which they are squarely and securely locked up, the type having been first leveled down by light blows of a mallet on a block of smooth, hard wood called a planer. This locking up of the pages in iron frames naturally corrects the defects noted in the twine-bound pages, and not only brings the type into proper alignment and adjustment, but prevents the probability of the type becoming displaced or new errors occurring through type dropping out of the page and being wrongly replaced.

When the locking up process is completed, the iron chase and type embraced by it is called a form. A proof of this form is read and examined by the proof-reader with the utmost care, with a view to eliminating remaining errors or defective types or badly adjusted lines and to making the pages as nearly typographically perfect as possible.

The form having received this final reading, the proof is passed back to the "stone hands," those who lock up and correct the forms, for final correction and adjustment. The forms are now ready for the electrotyper (or, when the book is to be printed direct from the type, for the pressman).

A compositor should be accurate in his work, because his is the initial work on any job (with the exception of work that is printed direct from cuts or engravings, that may go through the different departments), and care must be taken that no mistakes in the work be allowed to pass uncorrected. He should have color sense, in order to know what type and decoration best harmonize with the paper specified for the job on hand; he should have keenness of sight and dexterity, as the speed at which he can do his work in a considerable degree regulates his value to his employer and his capacity for increasing his income; he should have artistic feeling, as it is necessary that his work be pleasing to the eye when proofs are submitted to the customer that they be accepted without the necessity of making any changes or corrections.

B—LINTYPE AND MONOTYPE OPERATOR.

Until a few years ago, nearly all type was set by hand. With the introduction of the linotype machine, typesetting by hand in newspaper and magazine work, except the headlines, became generally a thing of the past. Later, the monotype machine was invented, which, as well as the linotype machine, is used for setting up type for books, etc. Of the two, the monotype can be used for a greater variety of work than the linotype, because with it the different characters are cast individually, thereby enabling it to be used on catalogues, etc., where tabulation is required. In correction of a misspelled word or other error, the monotype operator need change but one character; the linotype operator must make an entire new line.

It is a common practice among printers who use the monotype machine to make most of the small type used in their shops. The type thus made has not the lasting quality of that made by the type foundry, because it is softer, and generally the body of the type has numerous air holes.

The great advantage in using typesetting machines is that there is no type to be distributed back into the case. After the printing has been completed, the type is melted and cast into ingots ready to be used again.

Duties of the Operator.

The typesetting-machine operator, like the journeyman typesetter, receives his copy from the foreman or assistant foreman of the composing room. The form of the page, stating number of lines in column, size and position of illustrations, length of lines to accommodate illustrations, etc., are usually marked. It is necessary that the operator be very accurate in his work, because an error in one part, especially in the linotype work, may necessitate a change in the entire page column.

The selection and placing of the characters of both the linotype and monotype machines is done by the operator, who sits at a keyboard similar to that of a typewriter. It differs only in that there are no shift keys, thereby making more keys and characters, especially where textbooks in English and foreign languages are printed, where it is necessary to have the words accented, etc.

The occupation in itself is not any more unhealthful than any other sedentary occupation. It differs from that of a stenographer in that there is an odor of molten metal and that it involves the handling of metal. The operator of the monotype keyboard works under better conditions than the linotype operator, because in a linotype machine the caster is an integral part of the machine, while on the monotype keyboard the characters are transcribed on a roll similar to that of the player-piano, the position of the dots on the roll denoting an especial character. This roll when filled may be taken into another room where the caster may be installed. The casters are usually placed some distance from the keyboard because of the noise that accompanies their operation.

Qualities Demanded of an Operator.

A person entering this occupation should have the same general use of fingers as the successful typewriter operator. The touch differs only in that the fingers linger longer on the keyboard than on the typewriter; this relation may be compared to that existing between the operation of the organ and piano.

Men are usually employed to operate the linotype machine, while women as well as men may be employed as monotype-keyboard operators. The reason for this is that the linotype is complete in itself, while the monotype caster is removed from the keyboard, thus eliminating the mechanical attention which is required constantly of the linotype operator.

The work involves a peculiar strain which varies according to the class of copy. The operator is compelled to keep his mind constantly concentrated on his work because the words comprising each line must be evenly spaced before the operator can pass upon any particular line of matter; must be spaced to fill the entire line in order to make a balanced job. On account of all these details to be borne in mind, a person should be a quick thinker to be successful in this occupation.

Endurance and patience are qualities that are required of workmen here, as in nearly all occupations. Strength is not required, but dexterity and accuracy are important factors. Artistic feeling and color sense more than that possessed by the average high-school student would not be of especial value. The work set up by the operator is usually straight matter, but some firms, especially newspapers, set up their advertising matter with typesetting machines. Artistic training would naturally be of value because the artistic side of newspaper advertising has made great strides in the last few years, as can be seen by looking over copies of old newspapers.

What the Operator Needs to Know.

To be an expert, a person should be very intelligent in order to master the various kinds of copy that are assigned to him. A typesetting-machine operator should have the same general training as a journeyman compositor, especially in grammar, punctuation, paragraphing, etc., because—contrary to the old idea, to follow copy whether right or wrong—they should know

how to correct mistakes in copy. In the majority of cases the copy may not be relied upon to be correct unless it has been checked by a proof-reader or some other trained man before being submitted to the operator.

C—PRESSMAN.

After the forms are arranged ready for printing, they are sent to the pressman. In this room there are small presses, commonly called job presses, fed usually by hand, and large cylinder and other presses for poster, book and other large work.

Press operating, from all indications, is the coming occupation of the printing trade; because with the introduction of typesetting machines, the field of the compositor becomes narrowed, while on the other hand modern presses are becoming wonders in mechanical construction, and must necessarily be operated by intelligent mechanics.

The master pressman is the one who finishes the work for the eye of the public. If, with mechanical skill, he has artistic taste, he becomes a real master in his line. If he has not such ability, the work of artists in associate occupations may be spoiled on account of the poor workmanship of the pressman.

Pressmen by no means get all their working material from the composing room. The work that takes real artistic ability is usually color, half-tone and other plate work prepared by the artist.

At present the stone in lithographic work is being supplanted by light and pliable aluminum plates and the fast rotary press. The aluminum plate has all the requisites for the highest grade of lithographic or surface printing, and the rotary press is a vast improvement over the flat-bed press, not only as to speed, but as to the quality and uniformity of its product. The pliability of the aluminum plate and the ease with which it can be adjusted to a printing cylinder has resulted in the successful introduction and use of two or three-color lithographic rotary presses which print at one operation two or three colors.

Intimately connected with the subject of cylinder-press printing is that of the proper qualities and descriptions of paper to be used. It might be said at the outset that the salesman who takes orders for printing should be acquainted with the fitness of papers for the various kinds of work. The choice of paper in many instances accounts for the difference between good and bad printing, and a suggestion from the person who takes the order would be favorably entertained, especially by the pressman, who is usually confined, against his better judgment, along restricted lines regarding the quality of paper to be used on the job.

The first duty of the pressman before putting the form on the press is to know the size of stock on which the job is to be printed. In the majority of shops, this information, stating size, quality of stock, etc., is usually set forth on the job ticket that accompanies the job on its routine through the several departments.

The first step in making a press "ready" is to place a sheet of heavy cardboard around the cylinder, and over it draw a smooth piece of muslin or cotton cloth. This is called the packing. In many of the best offices this sheet of heavy cardboard is not used, but in its place a patent make-ready called tympany.

Over this a thick sheet of manila paper is shrunk; it is pasted under clamps on the front of the cylinder, and carried around and fastened to hooks on a rod on the back. The rod is then turned until the sheet is perfectly tight and smooth.

While the pressman is laying out his plates, the feeder should be cutting thin sheets of paper the size of one of the plates. Some of these are cut about one inch shorter than the plates and used for "bevells," and these are pasted on the middle of the full-size sheets. These bevells and the larger "blank" sheets are to go between the plates and the blocks to overcome any variation there may be in the thickness and to make the surface of the form as nearly level as possible. The bevells raise the centers very slightly above the edges of the plates, thus reducing the pressure of the cylinder at the points of contact and departure, and saving the plates from wear.

The cylinder being properly packed, the form is fastened on the press so that the impression of the form will come in the middle of the paper sheets. The rollers are now put in the press and adjusted to just touch the inking table, the ink put on the rollers and distributed, and one impression printed on one of several sheets of thin paper which are run through the press together. This printed sheet is then turned face down by the pressman and any unevenness of the impression noted. One of the printed pages is taken as a standard, and by removing as many pieces of the thin sheets as necessary from under the plates where the impression is too heavy or adding where it is not heavy enough, the surface of the form is finally evened, or made as nearly even as possible.

After this another impression is taken, and of this sheet an "underlay" is made to further even up the form. The low places in the individual plates are carefully marked on the impression with crayon or soft pencil and the spots so marked are covered with pieces of thin paper. The printed pages are then cut out a little larger than the type page and placed under the plates from which they were printed. The plates from the solid pages which have been substituted for the open pages are now removed, and the open pages are put back in their places on the form.

Up to this point all the making ready which has been done is of permanent use in printing all of the forms, providing the job in question is a book, etc., where there are several signatures, or forms. The work that follows has to be done on each form as it is put on the press.

More thin sheets of paper are now run through the press, the number run through together being one less than was printed for the underlay. These printed sheets are used for "overlays," which are very much like an underlay except that much more care is taken in marking any uneven places. A thinner paper is used to bring up the low places in the plates. An impression of the form is then made on the manila paper sheet which had, as before mentioned, been drawn around the cylinder, and on this printed manila sheet this overlay is pasted, the impression on the manila paper being a guide for the placing of the overlay.

Another overlay is now made in the same way as the first, only it will now be found, if the work has been properly done, that there will be only a few spots to be covered with tissue. After this overlay has been made and the necessary pieces pasted over the first one, a thin sheet of manila is smoothly and tightly drawn around the cylinder covering completely the thin manila sheet with the pasted overlays on it.

While the feeder has been filling the overlay, the pressman should have been getting "register," that is, moving the plates to make the headlines and sides of the plates align properly, so that when both sides of the paper have been printed, the pages will exactly back each other.

Variable atmospheric conditions, insufficiently matured paper and defects in machines are frequent sources of inaccurate register. These, to some extent, may be unavoidable and therefore beyond the pressman's control, but there are numerous other points which have important bearing upon accurate fitting of one color form with another and therefore require care and attention.

The press is now ready for operation, except for regulation of the ink supply. This process naturally divides itself into three parts; first, the distribution; second, the refreshing of the surface of the rollers; third, the quantity and property of the ink.

Distribution.—By this term is to be understood the spreading of the ink in an even manner over the surface of the ink table and the rollers. The degree of perfection reached in inking is directly proportional to the number of rollers used; therefore, in order to do first-class work, as many rollers as possible must be used. Speed is also a factor entering upon perfect distribution, as a pressman, by experience, knows what inks are most tenacious and at what speed he can operate his press to get the best results. It might be said here that the salesman in figuring the cost generally decides upon the quality of the ink to be used.

Refreshing of the surface of the rollers.—This is done by having the first rollers of the series operate in connection with the ink fountain, which

is regulated by means of thumbscrews so that the right amount of ink will run on the rollers and be distributed evenly over the form. Where too much ink shows on the printed sheet, the thumbscrews on the fountain are tightened a little to decrease the flow, and where not enough ink shows the thumbscrews are loosened to increase its flow. This process is repeated until the color is all right.

Quality of the ink.—The quality of the ink to be used for any given job when not definitely specified will depend upon the various conditions which the pressman must take into account. The chief elements in the calculations are the quality of the paper, speed of machine and the quantity of ink requisite for each impression. As a general rule, the greater the speed at which the rollers run, the less tenacious must be the ink. Room temperature is also a factor in this branch of the work, as the viscous properties of printing inks are affected very easily by change of temperature. During hot weather, many pressmen have the disagreeable experience of having their printing delayed due to the melting of the rollers.

The grippers, which seize and carry the sheets of paper through the press, the reels, cylinder bands and many other things have also to be adjusted. These adjustments can only be learned by actual experience.

Qualities Demanded of a Pressman.

Modern press work is so divided into specialties that many a pressman, although skilled in his own particular line, would be at a loss were he to be asked to operate a press of different kind on work with which he is not familiar. The reason for this is because, along with the introduction of printing presses for special work, the printing firms are beginning to specialize on different kinds of work.

Men only are employed as pressmen, because, as has been mentioned before, the modern printing press is a delicate piece of mechanism that requires an operator who has mechanical ability. Women are occasionally employed as feeders, but they as a rule do nothing but mechanically feed the sheets of paper into the press. The occupation of press feeder is being imperiled by the introduction of automatic feeders. These machines are very efficient, but for job work and other short work the hand press feeders will be used for some time to come on account of the time necessary to adjust the automatic feeder.

Accuracy is one of the important requirements for a pressman. In setting up for close register the pressman must bear in mind the possible changes in atmospheric conditions. It is an easy matter to so adjust a press that successive impressions of the cylinder will show no variation whatever, but to turn out thousand after thousand of sheets showing two colors, to give printings all in perfect register is quite another thing.

Strength beyond that possessed by the ordinary individual is not specially desired.

With the increasing use of colors in decorative printing, as well as in two, three and four color half-tone work, the pressman finds that the demand on his skill becomes correspondingly greater as the march of progress advances. He is now compelled to be a skillful blender of color, which requires in connection with accurate register a high degree of color sense. Fortunately, the ink maker has done his part well, in so far that he has supplied the pressman with a great array of fine colored inks from which to choose, and the pressman has but to make an intelligent selection according to the work in hand.

Keeness of sight is important in making ready, especially in marking out low and high lights in checking register. This quality in press work goes hand in hand with color sense and artistic feeling.

Dexterity more than that possessed by the average machine operator would not prove to be of any great additional advantage.

The making ready and watching the sheets as they come from the press to see that the "color" does not vary, is the skillful part of the process. The feeding can be done by a bright boy after a few weeks' experience, but, as has been said, is now done automatically by machines to a great extent.

D—ELECTROTYPING.

Electrotyping as applied to the manufacture of printing plates may be briefly described.

A mold of the object to be copied is taken in beeswax and suspended together with a plate of copper in an acidulated solution of copper sulphate. The mold is attached to the negative pole of a battery or dynamo and the copper plate to the positive pole. The electric current passing through the bath decomposes the solution and sets the copper free on the wax mold, depositing it in an unbroken sheet. When the copper shell has become of sufficient thickness it is removed from the mold, strengthened with a backing of soft metal, straightened, shaved, trimmed and blocked, and is then ready for the printing press. As thus described, the process is apparently a simple one; but it is in fact an art which demands a high degree of manipulative skill and the closest attention to detail.

Construction of Mold.

This is the most important department of electrotyping, because it is here that the question of profit or loss on a job is often determined.

It is the duty of the molder to make a mold in wax of the composed form. He prepares the wax, heating it in order to expel all moisture. Crude turpentine and black lead are now added and thoroughly incorporated in the wax. Having been thus prepared, the wax is dipped out and poured through a strainer upon shallow trays of brass or other metal and allowed to cool. The impression of the form in the wax is made by use of molding presses operated by hand, steam or hydraulic power. These presses are provided with indicators which show the depth reached by the type matter in the wax. After molding, the mold is trimmed and all wax displaced during molding and excess wax are removed, leaving the surface smooth. After this cutting-down process, the operator goes carefully over the mold with a sharp-pointed tool and picks out any shavings or particles of wax which may have become lodged in the indentations.

The mold, which now presents a reasonably smooth surface, must have the blank spaces between the printing surfaces raised in order to produce a depression in the electrotype and thus eliminate all possibility of smutting in printing. Unless the blank is raised or built up in the mold it would be necessary to deepen the impression in the electrotype by routing or chiseling, which is a much more expensive operation than building, particularly when a number of duplicates are required from one pattern. Building is an operation requiring a steady hand and quick eye, as well as skill which comes from long practice. This work is done by a tool called the building iron, which is not unlike a soldering iron, with the hot point turned at right angles with the handle. Care must be taken by the operator that the iron does not get too hot, otherwise the mold would be destroyed.

Metallizing.

This is the process of rendering the wax form conductive. If this is done by hand, the graphite or blacklead (which is used for metallizing) is brushed in with a camel-hair brush until a bright polish has been obtained and until it is certain that no spot, however small, has been neglected. Blackleading by hand is a slow and disagreeable process, and for this reason there are installed in the majority of electrotype foundries machines for doing this work. The time required to properly blacklead a mold depends upon the nature of the work and speed at which the brushes are operated. On account of the disagreeable features of blackleading by hand, due to flying dust, a wet process is sometimes preferred. This method is said to be entirely satisfactory, but for some reason has never come into general use.

To give the mold a better conducting surface than is provided by the graphite, and thus facilitate the immediate action of the current over its entire surface, it is customary to precipitate a film of copper on the mold before placing it in the bath. This preliminary coating of copper is pro-

duced by pouring on the mold a solution of copper sulphate and covering it with a sprinkling of iron filings. Care must be taken to avoid scratching the mold with the iron filings.

Battery Workers.

The depositing of the copper shell on the mold is done by suspending the mold, attached to the negative pole of a battery or dynamo, in an acidulated solution of copper sulphate. The positive poles are solid plates of copper, the surface of which being made equal to the exposed surface of the shell. The electric current passing through the bath decomposes the solution and sets the copper free on the wax mold, depositing a sheet of copper of given thickness. The length of time required to deposit a sheet of copper of given thickness depends on the current strength employed and the condition of the solution and connections.

While a scientific education is not essential, the battery man should possess a sufficient knowledge of chemistry and the principles of electro-metallurgy to enable him to properly prepare and care for his solution and to recognize the cause and apply the remedy for the difficulties which occasionally will confront him. It is also essential that the workman be familiar with the technical terms that are associated with the different processes involved.

Casting.

Having deposited a sheet of satisfactory weight, the shell is removed from the bath, cleansed of all wax, etc. The back is then covered with a coating of solder or tin-foil, which is necessary in order to have the backing metal stick to the shell. After the coating of tin is put on, the shell is transferred to a "leveling stand" and sheet is then covered with molten metal. There are machines on the market designed for flattening the plates by pressure after the metal has been poured and before it has set and hardened. This press is very simple in operation and presents no difficulties to the experienced worker.

After the shell has been backed up and straightened, it may be tacked or soldered to a wood or metal base in order to make it type high. The different jobs are then sawed apart in order that they may be straightened and finished.

The duties of the electrotype finisher are to make the face of the electrotype perfectly flat and level, to repair defective letters or to cut them out and replace them with type; to repair defective rules, etc., and finally to bevel the edges of the plates if they are to be worked on patent blocks or to mount them on wood or metal bases.

E—STEREOTYPER.

Stereotyping is the art of duplicating, in solid metal, type or cuts composed for printing.

There are three methods for stereotyping: the clay process, the plaster process and the papier-mache process. Of these the first two are practically obsolete.

The papier-mache process, or rather "hot stereotyping process" as it has come to be known, may be briefly described as follows:

A few sheets of thin paper are soaked in water until soft and then pasted together to form a "flong." This flong is beaten into a page of type and dried, thus forming the matrix to receive the molten metal, which, when cooled, becomes an exact duplicate of the type page.

A large number of duplicate casts may be made from the same matrix, either in flat form as required for flat-bed presses or curved to fit the cylinder of a rotary press.

Construction of Flong.

This work consists of pasting together sheets of matrix paper and sheets of tissue paper. Workmen should have knowledge of how to select papers of correct weights to suit requirements of different kinds of work.

Preparation of Form.

In preparing the form, it is necessary to see that all leads, quadrats and rules are down and that face of form is clean. If type or cuts are dirty, they should be cleansed with benzine, and then the forms should be planed or smoothed down and brushed lightly with oil to prevent flong from adhering to it. The form must be dried before going to the molder, and care must be taken to see that the form is not locked too tight.

Molding.

This work consists of laying a piece of flong somewhat larger than the form over the type, tissue side down, and then carefully and evenly beating the type into the paper until proper depth is obtained. Care must be taken to make the blows of the brush even and flat, because if beating is done with one end or side of the brush there will be great danger of tearing the flong. It usually requires considerable practice to make a good mold, but fairly good results may be obtained by the amateur if reasonable care is taken. The expert judges the depth of the matrix and the type by its color; as the paper is beaten into the form it becomes thin and the type shows through it. This color is also a guide to determine the evenness of the impression, for if the matrix is dark in one spot and light in another it is not of even depth. If the molder is not sufficiently experienced to be guided by the color in determining the proper depth of the mold, he may raise the corner of the matrix from the form and examine it, provided the portion so raised be carefully replaced and beaten lightly with the brush to avoid the danger of doubling.

The workman strikes the flong with light blows of the brush. It is better to strike many light blows than a few heavy blows, for unless the operator be an expert a heavy blow is liable to split the flong.

Packing Matrix.

This work consists of packing the depressions in the back of the matrix, which have been formed by beating the flong down into the spaces between the paragraphs or display lines. The purpose of this work is to give the matrix sufficient rigidity at the above points in order to withstand the weight of metal in the casts. The material used for packing the spaces may be pieces of old matrices, strawboard, felt, a putty made from marble dust and paste, or better than these, a compound made in the form of powder which may be readily spread over the matrix. These backing compounds may be procured of dealers in stereotypers' supplies or may be manufactured by the workmen.

Drying of the Matrix.

This work is done by drying machines, which dry the matrix while it is being firmly pressed against the type. Care must be taken to prevent matrix from shrinking during the process. There are several drying machines on the market, the later models having safeguards which prevent overheating, etc. These late improvements naturally eliminate much of the constant attention which is required of the operator.

Machine Molding.

There are several machines for molding and drying matrices on the market. The operator of these machines should be an experienced man, because great danger can be done to the type by subjecting it to too great pressure. This occurs when an attempt is made to attain a deep impression in a flong too hard for the purpose. The cold process of molding has been adopted by newspapers and publishers for drying the matrix without heating the type. The object of this process is twofold: first, to avoid injuring the type by overheating, and second, to save time in drying. The essential requirement of dry stereotyping is a dry flong from which satisfactory results can be obtained. This dry flong is supplied by supply dealers ready for use, but to date this dry process has not been successful in the reproduction of half-tone or fine work.

Casting.

The larger newspaper offices are equipped with automatic machines which not only cast the plates, but shave, trim and deliver them ready for the press at the rate of three or four per minute. This machine is called the Auto-plate. At one end of the machine is a casting mechanism in which the matrix is secured. Once the matrix is in position, the operator at the casting end of the machine throws down a control lever and the casting apparatus automatically proceeds to cast and deliver the plates to the finishing mechanism which is structurally joined to it. As each cast is ejected from the casting changer it is automatically moved into the finishing device, where likewise automatically it is trimmed head, foot and side, passed out, its bevels finished and delivered ready for printing. From three to four men are necessary for operating the machine; one to look after the casting operation, another to look after the supply of metal, and a third or fourth to inspect the plates as they are delivered and lift them off the machine.

Where the casting machine is not installed, the plants are equipped with cast-iron boxes hinged together at one end or side, and separated from each other by thin strips of steel called gauges, whose thickness determines the thickness of the stereotype. Casting boxes for flat-bed presses are flat, while casting boxes for rotary presses have the lower plate concave and the cover plate convex, the curves corresponding exactly to the plate cylinder of the press. Curved stereotype plates are locked on the press cylinders by clamps operating against the end of the plate. That the lock may be absolutely secure the plate ends are beveled, the latter overlapping the former and holding it firmly in position. The caster operator must take care to have the cast cool evenly to insure against irregular shrinking; he must know how to guard against any blistering of the matrix or honey-combing of the plates. Spongy plates may be due to the presence of zinc in metal or the lack of thorough mixing of the stereotype metal.

Sawing.

This is the operation of cutting off the tail or jet caused during molding. This work is done in the case of curved plate by cutting off cylinder. This is an iron cylinder mounted on a shaft supported in journals formed in the frame of the machine. Near one end of the cylinder is a rapidly revolving tool whose numerous teeth, which form the cutting surface, are beveled at an angle corresponding to the bevel required for the plate.

For flat-bed work the jets are cut off by a circular saw which is mounted on an iron table. The saw is about 16 inches in diameter, and to get good work should be driven at the rate of about 2,000 revolutions per minute. The operator should be able to keep the saw in condition and be able to file and reset it.

The following occupations in finishing are common to both electrotypes and stereotypes:

Shaving.—After electrotypes and stereotypes have been straightened and repaired, they are taken to a shaving machine for final cut, which should reduce their thickness to the standard adopted by different associations. This work is done by machines of various patterns and sizes, operated by hand or machine. For plates of rotary presses the work is done on machines which have the plates fastened to a revolving drum, the inner side of the plate being trimmed by a tool similar to that used on lathes. For flat-bed work the plates are trimmed by knives on machines similar to the planer. The operators of these machines should take care to have the thickness of the plate uniform and of the correct thickness.

Routing and Beveling.—Stereotypes as a rule require more routing than electrotypes, because if the electrotypes are built up properly this process, except for special work, will not be necessary. When stereotypes are produced from molds of zinc etchings or other cuts in which the relief is shallow, or when the matrix of a type form has not been properly packed, more or less routing or chiseling is required to deepen the relief sufficiently to prevent blackening or smutting the paper in printing. In newspaper work the curved plates, after having been shaved, are placed on a circular

iron horse or bench, raised to a convenient height from the floor, and the superfluous metal is removed from the edges with an iron-handled plane. The reliefs are deepened with mallet and chisel. Flat plates if finished by hand are worked upon in the same manner. There are many power routing machines on the market which do this work very efficiently. Both hand and machine routers must be very accurate in their work, because the job might be spoiled by a slip of the tool.

Trimming.—This work consists in trimming the sides and ends of plates to reduce them to standard sizes. In the case of a wood mounted job, the trimming is done after the plates have been mounted on blocks, when plate and block can be finished at the same time. Various machines have been designed for finishing the sides and ends of plates. For special work such as newspaper work and advertising cuts, machinery is employed which finishes both sides of the plates at the same time. Operators of these machines must take care that the machine is kept free from chips, etc., which frequently cause work to be destroyed, and might cause injury to the workmen.

F—BINDER.

Folding—Hand.

This work is done usually by women, who sit before large, flat tables while working. The stock is placed within easy reach of the worker by the porter. For smoothing the creases the worker uses a bone "folder," similar to a dull paper cutter. In this work care must be taken so that when the book is trimmed the printing on each page will exactly coincide in position with that on the other pages.

Folding—Machine.

An understanding of hand folding is necessary to detect errors in machine folding, and in addition the operator must have some knowledge of the working of the machine and be able to feed the sheets or adjust the automatic feeder at the right speed to keep pace with the movement of the machine. Very much the same requirements, ability to detect errors, to handle sheets deftly and quickly, and to manage a machine, are necessary in the work of filling the boxes of the gathering machine and in operating the wire-stitching or sewing machines.

Gatherer—Hand.

This work is also done by women, who work before tables on which there are placed piles of the different sections that comprise the book arranged in order in which the pages of the book must follow each other. The gatherer walks along the row, taking a section from each pile in order until the book is complete. She then takes the model volume, compares it and marks her initials in it, thus making herself responsible for mistakes.

Gatherer—Machine.

The gathering machine has a succession of boxes, one for each signature. These are filled in proper order by girls, and the machine is put in motion by the operator. In most binderies the operator of the gatherer is a man who has some mechanical ability in order that he can find and adjust defects in operation. Most modern machines in printing establishments require a fine degree of adjustment for successful operation. The machine takes a section from each box, placing one on top of another until the book is complete. If any of the signatures should become jammed the machine will stop, as is the case with most modern machines in the printing business.

Inspector and Collator.

This work consists in examining books, seeing that signatures follow in correct order, that illustrations appear at the right places and that there are no other serious defects in books, such as badly folded or mutilated sheets.

Sewing-Machine Operator.

To run a sewing machine is considered highly skilled work in the bindery, partly because the books that are to be sewed are more valuable than the wire-stitched pamphlet or the magazine and partly because the process is complex. To touch with paste the back of a section and then place it over the revolving arm of the machine while picking up the next section, watching the threads, and throwing aside badly folded or mutilated pages, requires a sort of co-ordination of head and hand which cannot be acquired without long practice.

Sewing Books by Hand.

This work is done by girls, who sit before tables. The signatures are sewed one on top of the other in regular order until the book is complete. The perfect use of both hands is desired, because this work is similar to ordinary sewing, only harder.

Trimmer.

As the book is sewed it is pressed, and then it is trimmed and finished to size. This work is done by machine, the duty of the operator being to adjust the machine to run, to feed books into machine during run and note any defects in operation.

Case-Maker.

The making of the cover of the book is usually done by men. The boards and cloth are cut to fit the volume and both are fitted into the case-making machine, which covers the cloth with glue, lays the boards in their proper places, pastes a strip of paper on the back and turns down the edges of the cloth—all in one complex operation—delivering the finished cases at the side of the machines. The operator of this machine should be accurate, have keen sight and should be quick at his work.

The operator of the casing-in machine feeds the forwarded books and covers into the casing-in machine, which smears the sides and covers of each volume with paste and automatically attaches the covers. The operator of this machine should have the same general abilities as the operator of the folding machine.

Gold-Leaf Layer.

If the covers are to be ornamented or lettered, the designs are stamped in the covers by means of a powerful press. If gold lettering is required, this gold must be laid on by girls who place the gold foil on the cover before it is stamped. Gold leaf laying is clean work and can be learned in a short time.

Hand Gilder.

This work consists in gilding the edges of books. It requires strength, and only men are employed to do gilding. Gilding is only done on high-priced work, and the method of putting on same is to clamp a number of books in a vise, then lay gold foil over the edges; this foil is then rubbed in by the operator, who uses a tool similar to a dull chisel.

Rounder and Backer.

This work is done by a machine. The operator should have the same requirements, ability to detect errors, to handle stock deftly and quickly and to manage the machine.

Pasting.

This work is done by girls and consists of pasting illustrations, maps, etc., in their respective places. This work can be learned in a short time.

TO THE
ARTIST

Wire Stitching.

This work is done by a machine operated by girls, who pick up the section, open it at the center and place over the arm in position, start machine by foot pedal, moving the open book along arm to desired position for each stitch, place book on pile of finished work and repeat operation. This work can also be learned in a short time.

Blank-book Maker.

The blank-book maker does not receive the sheets from a printer ready for binding. His trade includes the ruling and numbering of the pages of account books, ledgers, diaries, address books, albums, copy-books, portfolios. In this craft, as in that of the printer's binder, the processes of the work vary with the degree of preservation required for the sheets. With the introduction of card systems and loose-leaf note books, a great change has come over a portion of the blank-book maker's trade, and in most cases the binder is also a manufacturer of loose-leaf devices.

Exhibit No. 13.

COURSE OF STUDY, ELEMENTARY SCHOOL, CLEVELAND, O.

PRINTING.

It is the aim in the printing to give a general knowledge of the different kinds of work of the printshop.

The work of the course consists in turning out all the printed forms for the school, as well as some text and commercial printing.

The theory of modern type sizes is fully explained; and, after making a diagram of the type case for his own use, the student sets straight matter, which emphasizes indentation, spacing and justifying, and wide-open, double and single leaded and solid composition.

Distribution includes methods of distinguishing between letters.

The calculation of measurements is brought out in the composition of simple rule forms.

The use of furniture and galleys in making up of forms is demonstrated as well as methods of making ready and operating the press.

Exhibit No. 14.

FITCHBURG PLAN OF CO-OPERATIVE
INDUSTRIAL EDUCATION.

(The National Association of Corporation Schools, Bulletin 9.)

PRINTING.

(Figures at right indicate periods per week of 45 minutes' duration.)

First Year—All School Work:

English	4
Arithmetic, tables and shop problems	5
Civic and American history	4
Algebra	5
Freehand and mechanical drawing and bench work	10

Second Year—School and Shop Work:

English	5
Mathematics, algebra and geometry	5
Physics	4
Industrial history and commercial geography	5
Printing machinery and appliances, type forms	5
Drawing (lettering, designs)	5

Third Year—School and Shop Work:

English	5
Mathematics (estimating)	5
Chemistry	4
Physics	4
Printing machinery (one-half year)	4
Business methods (one-half year)	4
First aid to injured	1
Laying out and design	6

Fourth Year—School and Shop Work:

English	5
Mathematics (cost estimating)	5
Economics (one-half year)	4
Machinery and setting (one-half year)	5
Physics, electricity and heat	4
Chemistry (inks, gelatines, cleansers, etc.)	6
Drawing and design	4

Exhibit No. 15.

VOCATIONAL SCHOOL OF PRINTING, BUFFALO, N. Y.

Five courses are offered, as follows:

1. Pre-vocational Course.
Open to grammar-school boys who have passed into the seventh grade or higher; two years in length and leads to graduation with a state vocational school diploma.
2. Vocational Course.
Open to graduates of the pre-vocational course; two years in length and leads to graduation with a state senior vocational school diploma.
3. Part-time Continuation Course.
Thursday afternoon from 1 to 5; open to apprentices of the printing trades who are under 18 years of age. The employing printers are allowing these boys one-half day per week to attend the school without making deductions in their pay for shop-time lost while away from work.
4. Evening Course.
Three evenings per week. Open to advanced apprentices of the printing trades and to all young men of night-school age who have the necessary qualifications for work in printing and who have no opportunities to enroll in either day or continuation classes.
5. Vacation Course.
Four weeks during July. Arranged especially for those who wish to try the work before entering the regular course in September.

The work covered by the apprentices of the part-time classes in the composing division to date is as follows:

1. Straight composition.
Paragraphing.
Use of initial letters.
Hanging indention.
Paragraphs indented for set in heads.
2. Correct spacing.
Spaces used in ordinary composition.
How to properly justify a line of type.
The use of the 4 and 5 em spaces in connection with the punctuation and quotation marks.
Spacing of lines set in capitals.
Spacing of lines set in small capitals.
3. Proper distribution.
Care of cases, type and spaces.
Distribution of body type.
Distribution of display type.
4. A study of the point system.
5. Proportion. Three lessons.
6. Harmony. Three lessons.
7. Balance. Three lessons.
8. Composition of letterheads. Two lessons.
9. Composition of business cards. Two lessons.
10. Composition of title pages. Two lessons.
11. Drawing. Two lessons, making of preliminary sketches.
Arrangement of lines and masses.

The work to be taken up for the remainder of the term will be as follows:

- Billhead composition. Two lessons.
- Composition of cover pages. Two lessons.
- Composition of envelope corner cards. One lesson.
- Composition of tickets. One lesson.
- Composition of programs. Two lessons.
- Composition of advertisements. One lesson.
- Casting up tabular matter. Two lessons.

The work covered by the apprentices of the part-time class in the press work division to date is as follows:

1. Imposition.

Simple forms:

Ordinary single page, cover page, letterhead, envelope, corner, business card, etc.

Two-page forms:

Ordinary two-page; broad two-page; two-page form (length-wise).

Four-page forms:

Ordinary four-page form, broad four-page form, long four-page form, long four-page form (imposed from center), cover form, legal folio, circular (printed on first and third pages only).

2. Color study.

Science of color; light—darkness.

Spectrum; cold colors—warm colors.

Primary colors, nature of harmony when used together; mixing.

3. Presswork.

Mechanical instruction:

(a) Name of job presses, sizes, dimensions, parts, etc.

(b) Care of job presses: oiling, cleaning, washing up.

(c) Care of rollers: cleaning, knowledge of formula.

Press feeding: Care in handling sheets; how to feed letterheads, envelopes, cards, tickets, etc. Watching color, form, etc. Inking of press while running.

The work to be taken up for the remainder of the term will be as follows:

1. Imposition. Six lessons.

Eight-page forms:

(a) Ordinary 8-page form imposed from outside, and inside.

(b) Long 8-page form imposed from outside and inside.

(c) Broad 8-page form imposed from outside and inside.

(d) Eight-page folder form.

2. Presswork. Two lessons.

Make-ready (platen press): Putting form on press; gauging form for gripper margin; preparing and applying tympan on press; adjusting grippers; adjusting guides; registering form to sheet.

3. Color work. Two lessons.

(a) Science of color (review).

(b) Inks: proper kind to use; harmony with paper; special inks; care of inks.

The work covered by the apprentices of the part-time class in the book work division to date is as follows:

1. Applied English.

(a) Review of essentials of grammar.

(b) Rules for use of capitals.

(c) Rules for use of punctuation marks.

(d) Rules for division of words.

(e) Study of sentence structure, paragraphing and composition.

(f) Letter writing, including applications, inquiries, replies, orders for goods.

2. Printers' arithmetic.

- (a) Estimating cost of production of jobs, including typesetting, stonework, press work, paper stock, inks, sketches, half-tones, electrotypes, binding, etc.
- (b) Exercises in type measurement, amount of type required, amount of paper stock needed, etc.
- (c) Problems in paper cutting.
- (d) Estimating manuscript matter.

3. Industrial history.

- (a) History of the art of printing.
- (b) The development of printing presses, typesetting machines, book binding, engraving, electrotyping, lithography.
- (c) Short biographies of the lives of Ben Franklin and other leading masters.
- (d) Introduction to and study of trade journals with a view of developing trade knowledge in students.

4. Hygiene.

- (a) Occupational dangers and accidents.
- (b) Health rules for the worker.

The work to be taken up for the remainder of the term will be as follows:

1. Applied English.

- (a) Correction of common errors in sentence structure; study of abbreviations.
- (b) Rules for spelling.
- (c) Practice in reading manuscript matter.
- (d) Practice in writing copy for notices, programs, tickets, posters, etc.

2. Printers' arithmetic.

- (a) Taking of shop inventories.
- (b) Personal accounts and daily time-slips.

3. Industrial history and civics.

- (a) Commercial and industrial Buffalo and the printing industry in Buffalo.
- (b) Duties of citizenship and our city, state and national governments.

4. Hygiene.

- (a) First aid to the injured.
- (b) Science studies in the printing shop.

Exhibit No. 16.

COURSE OF STUDY IN PRINTING, COLUMBUS.
TRADE SCHOOL.

First Year.

First Semester.	Hours per week.	Second Semester.
Mathematics (1)	5	Same as first semester.
Writing (1)	1	
Physical Geography (1)	2	
Spelling and Etymology (1).....	2	
Grammar (1)	2	
Print Shop (1)	15	
Study	3	

Second Year.

	Hours per week.		Hours per week.
Etymology (3)	3	Etymology (4)	2
History (3)	2	Literature (4)	4
Grammar (3)	3	Grammar (4)	3
Spelling (3)	2	History (4)	2
Study	5	Study	3
Print Shop (3)	15	Spelling	1
		Print Shop (4)	15

Third Year.

Etymology (5)	3	Etymology (6)	3
Literature (5)	4	Literature (6)	4
Grammar (5)	1	Grammar (6)	1
Civics (5)	2	Civics (6)	3
Spelling (5)	1	Spelling (6)	1
Print Shop (5)	15	Print Shop (6)	15
Study	4	Study	3

Exhibit No. 17.

THE SCHOOL FOR APPRENTICES, THE LAKESIDE PRESS,
CHICAGO, ILL.

The course of apprenticeship is divided into periods: first, that of pre-apprenticeship, for the first two years, during which time the boys spend half time in the school and half time in the factory; and second, that of apprenticeship, when the boys spend full time in the factory with the exception of several hours each week when they attend the school.

The students are in school 3½ hours daily during the period of pre-apprenticeship and are divided into two classes, graded according to their standings. They also work 4½ hours daily in the shop or at work connected with factory or counting room.

The boys are paid \$2.40 per week for the first year, and \$3.00 per week the second year, of the pre-apprenticeship period. The rate is 10 cents and 12 cents per hour, respectively, for the time actually spent in the factory by the boys during the two years. In the school the instruction and all materials used are furnished free.

The amounts actually earned by the boys are shown in the following

	Per week.	Total.	Bonus; efficiency.
First year, 52 weeks.....	\$2.40	\$124.00	\$25.00
Second year, 52 weeks.....	3.00	156.00	25.00
First half, third year, 26 weeks.....	5.00	130.00	.....
Second half, third year.....	5.00	156.00	.....

The wages received by the pre-apprentices, as will be seen by the table, are more than the average wages received by boys in the usual occupations open to those of their age, as the work is steady and there is no loss incident to changing jobs.

Beginning the third year, the boys are paid \$5.00 per week and an increase of \$1.00 a week is given every six months until the rate equals journeymen's wages in the department chosen. Two special raises of \$1.00 each are given during the apprenticeship period for efficient service. . . .

. . . The contract guarantees to the boy steady employment at a regular increase in wages, and an opportunity to learn the trade as a whole table:

under supervision; also a more rapid advancement in trade training. A man with a good trade is independent and need never be out of employment. The contract guarantees to the firm continuous services of the boy for a definite period, hence, more care is taken in the selection of boys and in their training, and the result is a better grade of workmen. The apprentice realizes that advancements depend upon the excellence of this service and his attention to duty. . . .

. . . Bookbinding today on a large scale is a machine operation; most bookbinders become machine operators. As in all trades, there is still need of all-round workmen able to do high-grade hand work, and the apprentices in the bindery are required to learn the various operations of forwarding and finishing books before they are allowed to learn to operate the machine. . . .

. . . The supervisor and the parents co-operate by means of monthly reports and occasional visits, and the following information furnished by the foremen and overseers in the factory is sent to the parents:

1. Is he prompt?
2. Is he careful with tools and machinery and of materials?
3. Does he apply himself to job until completed?
4. Is he adapted to and prepared for the work he is doing?
5. Does he work well without supervision?
6. Does he work for results?

7. Has he energy in going ahead and doing things?
8. Has he ability to meet emergencies?
9. Does he get along well with others?
10. Is he improving?
11. Has he any serious faults? Specify.
12. Has he any bad habits? Specify.
Efficiency, academic (based on school work).
Efficiency, shop work (based on factory work).
Explanation—100 or over, Excellent; 95, Bonus Standard;
90, Fair; 85 or under, Failure.

Course of Study—First Year.

The following outline course for the first two years is here given to show the plan of the work:

ACADEMIC — GENERAL.

Arithmetic, Applied—Review of fundamental work as outlined in Applied Arithmetic; the technical work of the text completed; supplemented by actual problems constantly arising.

Algebra, Elements—Applied work far as possible.

English—Elements of grammar reviewed; outline text (English) with every point illustrated with real exercises; composition, based on the technical work outlined; every exercise a lesson in composition. As much attention is given to English in the mathematics, science and design classes as in the English classes; proof marks used in correcting all exercises.

Reading—Use of dictionary; diacritical marks taught; good articulation and correct enunciation basis of pronunciation. Practice in oral reading necessary to train copy-holders for the proof room. Each student required to read and report upon at least six volumes of standard literature.

Science—Elementary physiography (Salisbury). A study of the subject as outlined in the text.

ACADEMIC — TECHNICAL.

English—Spelling; capitalization; punctuation; origin of marks; division of words; quote marks.

Proof-reading—Marks used; origin of marks; signification of marks.

Signs used in Printing—Signs used; origin of signs; punctuation; reference; commercial; medical; accents; why accents are used.

Type—Composition; base; lead,—per cent for toughness; antimony,—per cent for hardness; small quantity of copper sometimes added. How made; the design, letters must harmonize. The punch, the mold, the matrix, the nick. The parts; names learned in connection with the drawing of a piece of type in design. Type sizes; point system, history of development. English names in common use; type high, .918 inch; Why was this height adopted? Face: old-style, modern, blackface; characteristics of each learned in connection with lettering in design. Capitals or upper case; lower case; italics; small capitals; origin of each class of letters. History of the alphabet. Condensed type (lean); expanded type (fat). Measurement. How to measure composed type in ems of its own size. How to figure cost of composition per thousand ems. Weight of composed type per square inch. Weight of type in a full case. Weight in various boxes. Why does the amount vary? How determine the amount for each box? The font of type. The weight font; as, 100-pound font. The letter font, as 16 A, 34 a.

Paper—Brief history of paper making. Kinds of paper and how made. Writing paper; bonds, linen, ledger. Book papers; machine finish, (M. F.); sized and super-calendered (S. & S. C.). Print papers; hand-made papers; imported, domestic. Cover stocks. Sizes and weights of papers; basis weight.

ART WORK.

Drawing—Freehand; sketching from common objects. Sketch of type; parts named. Sketch of stick. Sketch of galley. Mechanical with use of instruments. Layout of case. Diagram showing comparative number of ems to a given page.

Lettering—Freehand, penciling, spacing. The capital letter, the lower-case letter. The written letter with the lettering pen. The built-up letter. Layouts for pages, cards, job. Mechanical, layouts using the "square, board and triangle." The Roman alphabet and figures. Arabic figures.

Type—Study of type faces. Type faces suitable for different jobs. Modern and old-style compared.

Design—Margins: diagrams showing how to lay out page margins for books, cards and posters. Layouts: diagrams illustrating layout schemes for books, catalogs, advertisements, cards, title-pages, and covers. Repeating: to show how to lay out borders, surface design and ornaments. Bilateral units. Quadrilateral units. Continuous border designs. Borders for covers, pages, cards, advertisements. Review.

Color—Physical analysis: the spectrum. Chemistry of color: mixture of colors. Artistic analysis: the three-color theory. Hue: color naming and color mixing. Value: light and dark, tints and shades. Chroma: intensity, dullness. Harmony: of like colors, of unlike colors; by gradation, by contrast. Contrast: of like colors, of unlike colors; intense, dull. Color scheme.

TRADE.

The Beginner—The layout of the case. How to stand at the frame. To properly hold the composing stick. To set the composition stick. How to pick up the type from the case. How to empty the stick on the galley.

Spacing—Correct spacing for solid and leaded matter; correct spacing for matter leaded with four points or more; correct spacing for wide measure; correct spacing for italic type; correct spacing for capitals and small capitals; correct spacing for an extended letter.

Justification—Proper justification. To tie up a job and make sure it is properly justified.

Taking a Proof—To take a good proof. To clean the type properly after taking a proof.

Correcting—To correct type in the stick and lift a line from the galley. Proper position when working at a galley.

Lockup—How to lock up a small form. Position of furniture and quoins. Planing down form. To tighten quoins properly.

Distribution—To dampen and prepare the type properly for distribution. How to hold the type when distributing.

Indenting Paragraphs—Indenting paragraphs in different measures. How to set a letter. The use of Roman and Arabic numerals. Exercise in punctuation, capitalization and indentation.

Initial Letters—To properly insert initial letters. Exercise in punctuation, capitalization, double quotations and paragraphing.

Indentations—The common indentations: half-diamond indentation; hanging indentation; squared indentation; diagonal indentation.

Course of Study—Second Year.

ACADEMIC — GENERAL.

Geometry—The outline text, Wentworth's & Hill, is followed, and all work is applied so far as possible.

Bookkeeping, Business Forms—The lessons outlined followed. Layouts made of all business forms called for in lessons.

Elementary Mechanics—Applied work, using elementary principles within the limits of the ability of the class.

English—The work of the first year continued. Extended practice in punctuation, division of words and capitalization. Composition: practice in connection with history of printing and technical work outlined. Reading: required books as in first year. History of lettering.

History and Civics—Outline lessons given.

ACADEMIC — TECHNICAL.

History of Printing—How books were made before invention of printing. What led to the invention of printing. Invention of printing from movable type. The early printed books, Gutenberg. The early printers; Fust, Schoeffer, Jenson, Aldus, Manutius, Elzevirs, Plantin, Bodoni. Printers' marks; origin; colophons.

Printing in England—Caxton, Caslon, Moxon, Daye, Pickering, Morris.

Printing in America—Famous American printers: Franklin, Bradford, Thomas, Bruce and DeVinne.

The Printing Press—The first press. The printing press; the bed, the platen. The hand press; the platen press; the cylinder press; the rotary press; the offset press.

Plates—The electrotype: how made; the mold; the shell; the mounted plate. The stereotype: how made; the mold; the plate. The linotype: principles of. The half-tone plate: how made. Process plates: how made. Zinc plates: how made.

Composition—How to determine amount of composition copy will set in a given size of type. How to determine a well-proportioned page; also studied in connection with design. How to figure cost of composition of a given job. How to figure amount of stock necessary for a given job. Imposition: how to lock up 4 pages in two forms to be printed sheetwise, how to lock up 4 pages to be printed work and turn; principles of imposition.

ART WORK.

Layouts—Diagrams illustrating layout schemes. Catalog pages. Advertisements. Cards. Title pages. Covers.

Design—Proportion. Balance of measure. Geometric units: dividing spaces to lay out designs. Conventionalizing: reducing natural motives to conventional design. Plant forms. Animal forms. Initials: plain, mortised, elaborate. Monograms: personal. Trade-marks. Ornaments. Head pieces, end pieces. Review.

Color—Review of color analysis. Color schemes. Colored inks on tinted papers. The three-color photo half-tone process. The offset press. Lithography. The emulsion process.

Making a Book—The position of type on a page. Making up a book. The preliminary matter. The half-title. The title-page. Copyright and imprint. The dedication. Preface or introduction. Table of contents. Running heads. Extracts or quotations. How to set the various notes. Foot-note. Side-note. Cut-in note. How to use the reference marks.

Engravings—Inserting engravings in a page.

Tabular Work—Theory of the composition of a table.

Tables Without Rules—Number of ems contained in a pound of type. Standards of type. Standard book sizes. Sizes of flat writing paper. Standard sizes of ruled paper. System for ordering sorts. Weight of type in pair of cases. Weight of type in a job case. Weight of type held in a pair of cases. Weight of type held in different boxes in a case. Standard envelope sizes. The point system. Number of words to the square inch.

Tables With Rules—Sizes and weights of paper. Sizes of cut cards. A complete font of Roman type. Amount of paper required for a job. Tables for manuscript copy. Catalogue pages.

Job Work—Title pages. Small job work. Booklets.

Exhibit No. 18.

SUMMARY OF PRINTING COURSE, WEST TECHNICAL HIGH SCHOOL, CLEVELAND, OHIO.

PRINT SHOP.

The course of printing as conducted at West Technical High School embraces two separate but allied subjects—typography and art. The art in relation to printing is worked out in the art room, while the mechanical side of typography is done in the print shop. The combined course is a happy combination of the technical and aesthetic based on wide practical experience and a thorough knowledge of beauty as embodied in the printing art.

The student is given information on an entirely new basis, so far as typographical education is concerned. He is told how to do a thing and why one way is right and the other way is wrong. The inculcation of art principles governing printing is thoroughly dealt with, so that he is able to distinguish the good from the bad, and forms a habit of constructing only the correct kind of composition.

The student learns the theory—the “why” of correct typography, and gets the practice of doing correctly under the eyes of capable and painstaking instructor. To be shown why his work is wrong, and how to correct it, is of inestimable value to the student, as is also to be told why a piece of printing is good and how to produce more as well.

He composes all kinds of and classes of commercial printing, not after the plan of another man's style, but by applying the principles he learned in the art room. The student is able to do work he never did before, and to do that which he is accustomed to doing in a more satisfactory manner, for, as some educator has said, “An ounce of accurate knowledge is better than a ton of haphazard practice.”

SYNOPSIS OF LESSONS.

- The point system; historical and practical.
- Composition of booklet pages from reprint, but of different size type and measure than copy.
- Composition of booklet pages from manuscript copy.
- Test of English, spelling, punctuation, capitalization, by correcting faulty manuscript.
- Composition of catalogue pages from reprint, but of different size type and measure than copy.
- Composition of catalogue pages from manuscript copy.
- Composition of poetry from manuscript copy.
- Outside work, written composition from one of two subjects, chosen by the instructor.
- Working up booklet page from dummy.
- Use of proof-readers' marks; correcting proof.
- Test of English, spelling, punctuation, capitalization by correcting faulty manuscript.
- Working of initial letters in composition.
- Composition of envelope corner cards from reprint and manuscript copy.
- Test of English, spelling, punctuation, capitalization, by composition from reprint copy.
- Composition of bill heads from reprint and manuscript copy.
- Composition of menus from reprint and manuscript copy, two and four pages.
- Composition of programs from reprint and manuscript copy, two and four pages.
- Test of English, spelling, capitalization, punctuation, by correcting and rewriting faulty manuscript.
- Composition of society stationery, including invitations, at-home and reception cards, wedding invitations and announcements from manuscript copy.

Composition of advertisements from reprint and manuscript copy.
 Composition of business announcements from reprint and manuscript copy, two and four pages.
 Test of English, spelling, punctuation, capitalization by composition from reprint copy.
 Composition of cover pages from reprint and manuscript copy.
 Composition of title pages from reprint and manuscript copy.
 Composition of book headings from manuscript copy.
 Outside work, written composition from one of two subjects chosen by instructor.
 Composition of blank-book work from reprint and manuscript copy.
 Composition of tabular work from reprint and manuscript copy.
 Imposition of two, three, four, six, eight, ten and twelve-page forms.
 Locking up of cylinder and platen-press forms.
 Test of English, spelling, punctuation, capitalization, by composition from reprint copy.

ART ROOM.

The printer has to deal with that form of design which has for its object the selection and arrangement of words in type. He must know how to place together in the best possible relationship, consistent shapes and sizes. He must understand balance in the arrangement of these forms and sizes, and the power and force of color rightly used.

The night-school course in printing, as taught in the West Technical High School art room, carries the printer step by step through a series of carefully graded exercises which develop his ability to produce well-designed pages, in which there is harmony of line, color, ornament, form and arrangement. This knowledge comes only through careful training.

The work in this department is entirely freehand, and the technique so acquired familiarizes the printer with the formation of letters, gives him the ability to make a successful layout, enables him to enter the field of original design in hand lettering and ornament (for which there is an ever-increasing demand), and is the stepping-stone from the compositor to the artist-printer.

The designing of appropriate ornament, well related to printed matter, will be included in the course. The equipment in the art department will meet every requirement of the student.

SYNOPSIS OF LESSONS.

Proportion.
 Designing and lettering, one word on cover page in pencil, block letter, size 6 x 9.
 Shape and tone harmony in designs.
 Designing and lettering, group of two or three words on cover page in pencil, block letter, size 9 x 12.
 Balancing measures in design.
 Designing and lettering, balancing two groups of Roman capitals on page, size 9 x 12.
 The arrangement of lines and masses.
 Rearrangement of title pages, cover pages and advertisements.
 Color theory.
 Designing and lettering, cover page or two groups of Gothic letters, penciled and inked, with use of one color and black, size 12 x 18.
 Plant analysis.
 Designing of units and borders.
 Designing and lettering; Christmas motto card, penciled and inked, using Gothic letters, black and two or more colors, border and design.
 Designing and lettering of milliners' or jewelers' announcement in pencil and inked, using italic letters.
 Designing of page ornaments.
 Designing and lettering of magazine advertisements.

Exhibit No. 19.

UNIT COURSES OF INSTRUCTION, THE VOCATIONAL SCHOOL OF PRINTING, BUFFALO, N. Y.

Composing Department.

Units.	GROUP 1—TYPE CASES.	Lessons.
1. California Job.....		1
Reasons for different characters in case.....		1
Yankee Job.....		1
Triple Job.....		1
News		1
GROUP 2—BOOK COMPOSITION.		
2. A study of the b, d, q, n, and u.....		1
3. Composing-room materials.....		1
4. Various sizes of body type.....		1
5. Correct spacing methods.....		2
6. Preliminary instruction to typesetting.....		1
7. Composition of simple paragraphs.....		5
8. Method of correcting proof.....		1
9. Distribution		1
10. Booklets		4
11. Intricate book composition.....		4
GROUP 3—TABULAR COMPOSITION.		
12. Preliminary instruction to tabular composition.....		1
Tabular forms.....		4
Use of typo-tabular forms.....		1
13. Distribution of tabular forms.....		1
GROUP 4—TYPOGRAPHICAL DESIGN.		
14. Proportion		2
15. Balance		2
16. Harmony		1
17. Lettering and designing.....		6
GROUP 5—JOB COMPOSITION.		
18. Various sizes of display type.....		1
Kinds of type in use in America.....		1
19. Commercial forms, etc.		5
Cover pages, title pages, etc.		1
GROUP 6—ADVERTISEMENT COMPOSITION.		
20. Proper display for an advertisement.....		1
Single-column advertisements		3
Double-column advertisements		3
Three-column advertisements		3
Layouts for larger advertisements.....		4

Press Department.

GROUP 1—STONEWORK.

1. Elementary principles.....	1
Definitions of terms.....	2
2. Simple forms.....	2
3. Two-page forms.....	2
4. Four-page forms.....	2

Units.	Lessons.
5. Folder forms.....	4
6. Eight-page forms.....	2
7. Twelve-page forms.....	4
8. Sixteen-page forms.....	2
9. Eighteen and twenty-page forms.....	4
10. Twenty-four-page forms	4
11. Thirty-two-page forms.....	4
12. Forty-eight and sixty-four-page forms.....	4

GROUP 2—PRESSWORK.

13. Mechanical instruction	2
Cleaning, oiling, washing, etc.	1
Care of rollers, etc.	1
14. Feeding	2
Slip-sheeting, bronzing, etc.	1
15. Making ready—job presses.....	6
Plain type forms.....	6
Plates and type.....	6
Halftones	6
16. Theory of cylinder-press work.....	4
Theory of three-color work.....	4

GROUP 3—COLOR STUDY.

17. Theory of color.....	2
Spectrum	2
Primary, secondary, and tertiary colors.....	2
18. Harmony of primary colors.....	2
Harmony of secondary colors.....	2
Harmony of tertiary colors.....	2
Harmony of primary and secondary colors.....	2
Harmony of secondary and tertiary colors.....	2
19. Complimentary harmony	2
Harmony of tints and shades.....	2
Harmony of black and with other colors.....	2
Harmony of paper and ink.....	2
Harmony of gold and silver with other colors.....	2
20. Mixing of colors.....	3
Mixing tints	3
Subduing colors	3
21. Rules for correct harmony.....	1
Hints on colors, etc.	1
22. Manufacture of ink.....	1
Care of ink.....	1
Special ink and bronzes.....	1

GROUP 4—PAPER STUDY.

23. History	1
Manufacture	1
24. Sizes, weights, qualities, etc.....	1
Cutting	1

Academic Department.

GROUP 1—BUSINESS ENGLISH.

Units.	GENERAL REVIEW OF ESSENTIALS OF GRAMMAR.	Lessons.
1. Parts of speech.....		4
Sentence structure		3
2. Paragraphing and composition.....		3
Business letters		2
3. Correction of faulty English.....		2

Units	TECHNICAL STUDIES RELATING TO PRINTING.	Lessons
4.	Rules for capitals.....	2
	Rules for punctuation marks.....	4
5.	Rules for spelling.....	2
	Rules for word division.....	2
	Compound words.....	1
	Abbreviations.....	1
6.	Proof-reading.....	2
7.	Commercial forms.....	2

GROUP 2—MATHEMATICS.

8.	Drill in fundamental processes.....	1
9.	Common fractions.....	1
	Decimal fractions.....	1
10.	Denominate numbers.....	1
11.	Percentage.....	2
12.	Mensuration.....	1

TECHNICAL STUDIES RELATING TO PRINTING.

13.	Problems in paper-cutting.....	1
	Figuring stock for job.....	1
	Computing cost of stock.....	1
	Supplementary problems in stock, ink, materials.....	2
	Finding equivalent weight of paper.....	1
14.	Cost estimating.....	10
15.	Computing type.....	1
	Computing number of leads.....	1
	Estimating manuscript.....	1
	Cost of composition.....	1
	Estimating weight of body type.....	1
	Determining a well-proportioned page by square-root method.....	1

GROUP 3—SCIENCE HYGIENE.

16.	Food, clothing, shelter.....	1
	Personal hygiene.....	1
	Sanitation.....	1
	Exercise, fatigue, recreation.....	1
17.	Health rules for the worker.....	1
	Heating, lighting and ventilation of workrooms.....	1
18.	Occupational dangers and accidents.....	1
	First aid to the injured.....	1

PHYSICS.

19.	Study of the mechanics of the presses, binders, paper-cutters, etc..	3
20.	Electricity and its use in the print shop.....	3

GROUP 4—ECONOMICS, HISTORY, GEOGRAPHY, AND CIVICS.

21.	General industrial history studies related to printing.....	5
22.	Short biographies of Franklin, Caxton, Morris and other leading masters.....	3
23.	Commercial and industrial Buffalo and the printing industry in Buffalo.....	1
24.	Duties of citizenship.....	2
	Our city, state and National governments.....	1

Exhibit No. 20.

SHORT UNIT COURSES IN PRINTING SUGGESTED BY THE
NATIONAL SOCIETY FOR THE PROMOTION OF
INDUSTRIAL EDUCATION (BULLETIN No. 17).

Proof-reading and Copy Editing.

A. THEORY — LECTURES.

Courses for proof-readers, in:

1. Proof-readers' marks.
2. Punctuation.
3. Reference marks.
4. Capitalization.
5. Division of words.
6. Compounding.
7. Abbreviations and contractions.
8. Simplified spelling.
9. Rules of geographic board.
10. Synonyms and antonyms.
11. Orthography.
12. Homonyms.
13. Grammatical construction.

B. PRACTICAL WORK.

1. Galley reading.
2. Galley revising.
3. Reading with copy.
4. Advertisement reading.
5. Advertisement revising.
6. Page reading.
7. Final and foundry reading.
8. Editorial reading.

EDITING.

Courses for copy editors, in:

1. Copy editing.
2. Preparation of manuscript.

PRINTING.

Courses for foremen, journeymen apprentices, in:

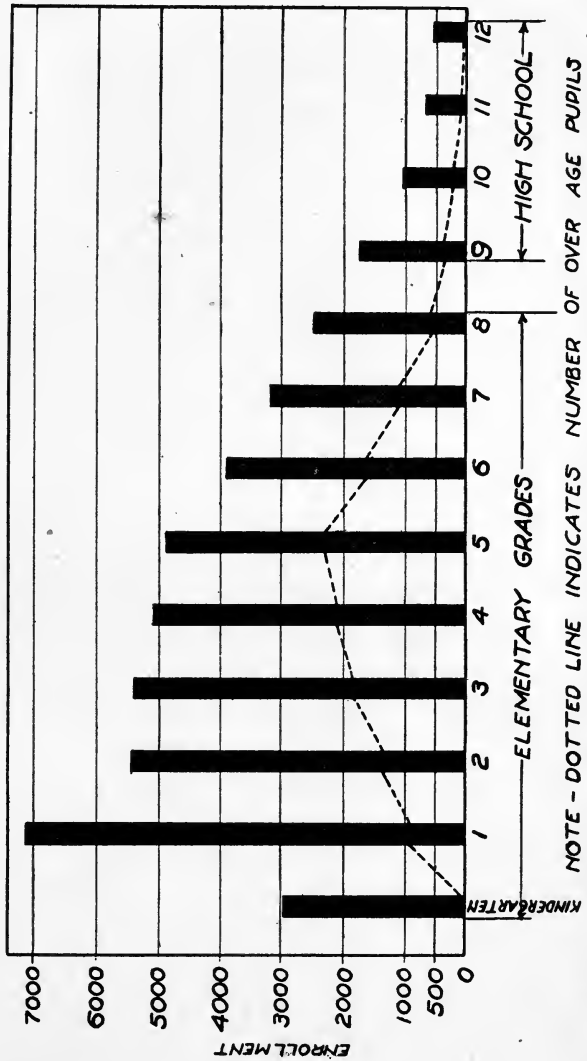
1. Make-ready for pressman.
2. Register.
3. Ink.
4. Papers.
5. Up-to-date styles.
6. Cost system.
7. Composition.
8. Cutting stock.
9. Design and printing.
10. Punctuation and proof marks.

Exhibit No. 21.

CINCINNATI PUBLIC SCHOOLS—ENROLLMENT BY GRADE
FOR THE SCHOOL YEAR 1912-13.

29

CINCINNATI PUBLIC SCHOOLS
ENROLLMENT BY GRADE FOR THE SCHOOL YEAR 1912-13



NOTE - DOTTED LINE INDICATES NUMBER OF OVER AGE PUPILS

H-11

Exhibit No. 22.

STATEMENT OF VOCATIONAL AND PRE-VOCATIONAL EDUCATION IN THE CINCINNATI PUBLIC SCHOOLS.

November 1, 1914.

A. Vocational Education:

1. High School.
 - (a) Commercial course—bookkeeping; stenography.
 - (b) Boys' co-operative course—machinists, pattern makers, architectural iron workers, draftsmen.
 - (c) Girls' co-operative course—millinery, dressmaking, commercial phase of cooking (catering and lunch-room management).
2. Continuation School for Apprentices:
Machinists, patternmakers, draftsmen, printers.
3. Elementary School—Rothenberg:
Motor-minded boys. Pre-vocational shop work, using commercial processes and practice.

B. Pre-Vocational Education:

1. High School:
 - (a) Manual training course—involves commercial shop practice in the use of wood-working and metal-working machines.
 - (b) Art—preparation for lithographing and commercial art.
 - (c) Music—preparation for College of Music.
2. Elementary School:
 - (a) Manual training course—more and more turned from making set models to constructing and maintaining the equipment of the school and to real problems in the life of boys.
 - (b) Oyler, Riverside, Lincoln, Douglas, Guilford, Washington, Washburn, Schools give increased time to shop, use of real problems, adapting processes from trades and industries to meet local needs. Connection is made with the home wherever possible by emphasizing the duties which arise in the home life and using in the shops the materials of the daily life of the home.
For girls, this takes the form of an intensified home-making course.

Exhibit No. 23.

**AGREEMENT BETWEEN THE ROCHESTER TYPOTHETAE AND
THE ROCHESTER SHOP SCHOOL.**

The term of apprenticeship in the printing trade shall be four years, three months of which shall consist of a preliminary or "try-out" course at the Rochester Shop School. During this preliminary course the fitness of the pupil for the printing trade shall be determined.

Upon completing this preliminary course, the pupil may enter the employment of some printing plant as an apprentice, the Typothetae agreeing to provide places for a certain number of pupils each year. The apprentice shall alternate weekly between the shop school and said printing plant, and is to receive from the employer for the balance of the first six months a weekly wage of \$4—\$4.50 for the second six months—\$5 for the third six months and \$5.50 for the fourth six months. The employer is to pay wages for the school time as well as for the shop time.

After this period, having faithfully performed his duties, he may devote the remainder of his apprenticeship entirely to shop and for which he shall receive \$9 per week for the first six months—\$10 per week for the second six months—\$11 per week for the third six months and \$12 per week for the fourth six months; during which time, however, he shall be considered under the supervision of the shop school and upon completion of the school term and apprenticeship, having passed all the examinations and being graduated from the shop school, he shall receive from the employer as a gratuitous bonus in addition to his salary and not any part thereof, the sum of \$100.

Exhibit No. 24.

APPRENTICESHIP AGREEMENT ENTERED INTO BY TYPOGRAPHICAL UNION No. 9 WITH THE PRINTING DEPARTMENT OF VOCATIONAL SCHOOL No. 11, DEPARTMENT OF PUBLIC INSTRUCTION, BUFFALO, N. Y.

This apprenticeship agreement, made and entered into this first day of March, 1914, by Typographical Union No. 9 with Vocational School No. 11, Buffalo, N. Y., is as follows:

DAY SCHOOL GRADUATES.

1. Graduates of the two-year day vocational course in printing shall be credited by the union with one year on their term of apprenticeship.

ADVANCED DAY COURSE GRADUATES.

2. Graduates who remain at the school and complete the two-year advanced day vocational course, shall be credited by the union with an additional year on their apprenticeship.

NON-GRADUATES WHO ATTEND EVENING SCHOOL.

3. Graduates who enroll in the evening advanced vocational course for two years during their apprenticeship (provided they attend 75 per cent of the time and make creditable progress) shall be credited by the union with an additional one-half year on their term of apprenticeship.

GRADUATES WHO TAKE ADVANCED EVENING SCHOOL WORK.

4. Apprentices in the trade who are not already graduates of the two-year vocational course, but enrolled in the evening school for two years (provided they attend 75 per cent of the time and make commendable progress) shall be credited by the union with one-half year on their term of apprenticeship.

STUDENTS IN CONTINUATION CLASSES.

5. Apprentices who enroll in the continuation classes one-half day per week for two years shall be credited by the union with one-half year on their term of apprenticeship.

Exhibit No. 25.

AGREEMENT BETWEEN THE SCHOOL COMMITTEE OF THE
CITY OF PROVIDENCE AND CERTAIN MANUFACTURING
AND COMMERCIAL FIRMS FOR THE PROMOTION OF IN-
DUSTRIAL EDUCATION, SEPTEMBER, 1910.

To the end that there may be produced in the city of Providence a higher type of industrial worker and a more efficient citizenship, there is hereby organized a high-school course in co-operative industrial education, whereby pupils so desiring may pursue their academic and shop courses concurrently under proper agreements between the school committee of the city of Providence and such corporations, firms or individuals as may enter into this plan for the promotion of industrial education.

That this combined school and shop education may most effectively realize the purposes for which it is organized, it is mutually agreed by and between the school committee of the city of Providence, in the state of Rhode Island, party of the first part, and — of —, party of the second part, as follows:

1. The party of the second part agrees to place, as far as possible, the facilities of — establishment at the disposal of the school committee for general educational purposes along industrial lines.

2. The party of the second part agrees to receive on the first days of July and February or as near those dates as possible, in each year during the life of this compact, a certain agreed number of high-school pupils as prospective apprentices, to be assigned by the superintendent of schools. Provided, however, that no pupil shall be assigned without his consent and that of his parents or guardian; nor shall any pupil be assigned as such apprentice who has not reached the age of 15 years; or has not completed at least the first year of the high-school course of study; or who is not physically able to perform the work to which he is to be apprenticed.

3. The party of the second part agrees to supply these apprentices with such opportunities for work and instruction in same as shall afford them the largest possible facilities for becoming competent workmen in the trade or occupation carried on by said party of the second part.

4. The school committee, through its committee on high schools, shall cancel this agreement with the party of the second part at the end of any year, if it shall appear that said party of the second part has not been endeavoring in good faith to carry out the part of the agreement to afford the apprentices assigned the largest possible opportunities for learning as a whole the trade or occupation which is represented by the work of the concern.

5. The establishment of said party of the second part shall at all times be open to the inspection of officials designated therefor by the committee on high schools; and all reasonable suggestions or requests from the school officials in charge of the industrial course shall receive careful consideration and as far as possible shall be granted.

6. Said party of the second part agrees to maintain in — plant at all times, subject to the examination and approval of the officials designated therefor by the committee on high schools, proper sanitary conditions and adequate provisions for the safety of the pupils in performing the work to which they are assigned.

7. The party of the second part agrees that — will not dismiss from — employ a school apprentice without the approval of the committee on high schools; provided, however, that for misconduct, idleness or infraction of rules of the establishment, an apprentice may be suspended until such time as his case may come before said committee for consideration and final action. An apprentice who for any reason may be suspended from school shall not be permitted to engage in shop work during the period of such suspension.

8. In case an apprentice desires to withdraw from his apprenticeship before its completion, the matter shall be referred to the committee on high schools of the school committee as to whether such withdrawal is necessary or desirable. If, after conference with the employer, it is decided that such withdrawal is desirable, the apprentice and his parents or guardian shall be released from the obligations of their contract and bond, if any, and the amount of money, if any, which has been deposited with the said party of the second part in behalf of the said apprenticeship shall thereupon be refunded. A pupil who discontinues his apprenticeship, unless assigned by the superintendent of the school to some other line of work, shall be dropped from the co-operative course, but he may be transferred to some other high-school course and given credit for the studies already completed.

9. Said party of the second part agrees to submit all forms of contract for these apprentices in regard to hours of work, vacations, rate of wages, length of apprenticeship and all similar matters to the committee on high schools for its approval; and further agrees not to change, during the life of this agreement, the form of any contract thereunder or the terms of the same, without the previous consent of said committee.

10. No apprentice contract shall be approved by the committee on high schools which permits more than 10 hours' work in any one day, more than 55 hours work in any one week; nor where the compensation is less than 10 cents per hour for the first year of shop work, twelve cents for the second year and 14 cents for the third.

11. No contract or other form of agreement shall be made which requires a course of less than four years in the high school, such part of the time to be spent in shop work as may be mutually agreed upon by the committee on high schools and the contracting employer.

12. Any disagreement as to the interpretation of this agreement, or any contract drawn thereunder which can not be readily adjusted by the parties thereto, shall be referred to the mayor of the city for adjustment; and his decision shall be final and binding upon all parties to the agreement.

13. This agreement may be canceled by either party at the end of any school year, upon first giving to the other party three months' notice in writing of such intention, except in cases provided for in section 4 of this agreement; but no apprenticeship contract made prior to such cancellation shall be altered or annulled thereby during the term for which such contract was made.

14. Upon the successful completion of such a course a diploma shall be issued to the graduate, signed by the proper school officials and by representatives of said party of the second part.

In witness thereof, the school committee of the city of Providence, by its President, —, hereunto duly authorized and said —, by its —, hereunto duly authorized, have caused these presents to be executed in duplicate this — day of —.

The School Committee of the City of Providence.

By —

By —

Executed and Delivered —

In Presence of —

Exhibit No. 26.

APPRENTICESHIP AGREEMENT BETWEEN THE CURTIS PUBLISHING COMPANY AND THE APPRENTICE AND PARENT OR GUARDIAN OF SAID APPRENTICE.

Agreement made this — day of —, 19—, by and between the Curtis Publishing Company (hereinafter called Company) of the first part; — (hereinafter called Apprentice) of the second part; and —, parent or guardian of apprentice (hereinafter called parent or guardian) of the third part.

Whereas, Apprentice desires to learn the trade of compositor and company is willing to provide him instruction in said trade, upon the terms hereinafter set forth.

Now this agreement witnesseth:

First: Company hereby employs apprentice for a term of four (4) years from date hereof and agrees to give or procure for him during such period such instruction and training as, in its opinion, are necessary in order that apprentice may learn the trade of compositor.

Second: Apprentice hereby accepts such employment and agrees faithfully to obey the rules of the company, and to perform such work, attend such school and study such lessons as may, from time to time during the existence of this agreement, be assigned to him by company or by any person having due authority to act for company.

Third: In the shop apprentice will observe such shop hours of the company as may, from time to time, constitute one week's work and 52 weeks shall constitute one year for the purpose of this agreement. All time lost by apprentice through sickness or otherwise, shall be made up by apprentice, before completion of his employment.

Fourth: Apprentice will devote so many hours per week as company may, from time to time, deem necessary, not exceeding 12 hours each week, to study at such school and during such hours as company may designate, including attendance at school if company deems necessary, on Saturday mornings.

Fifth: Company will pay apprentice for all work actually performed by him for company (including the hours spent by apprentice in study at school as aforesaid) during the term of his apprenticeship, wages as follows:

For the first half year, at the rate of — per week.

For the second half year, at the rate of — per week.

For the third half year, at the rate of — per week.

For the fourth half year, at the rate of — per week.

For the fifth half year, at the rate of — per week.

For the sixth half year, at the rate of — per week.

For the seventh half year, at the rate of — per week.

For the eighth half year, at the rate of — per week.

Such payments shall be made at company's regular periods for payroll payments, but need not be oftener than once a month.

Sixth: In addition to the wages above specified, company will, upon the completion of the four-year term herein specified by apprentice, in a manner satisfactory to the company, pay apprentice the sum of \$100 in cash.

Seventh: Company will give apprentice each year one week's vacation, with pay, at such time as will best suit company's convenience during the continuance of this contract.

Eighth: Apprentice shall have no right to terminate this agreement, but shall be bound to serve company in accordance with the terms thereof until the expiration of the whole term of four years above specified; but company shall have the right at any time, upon one week's notice in writing to apprentice, to terminate this agreement and all rights of apprentice hereunder for any cause it regards sufficient.

Ninth: Upon the completion by apprentice, to the satisfaction of company, of all the duties hereby imposed upon him, he shall be considered a journeyman compositor and entitled to the minimum rate of journeyman compositor's wages in force in company at that time, if he continues in company's employ.

Tenth: Parent or guardian of apprentice hereby assents to the employment by company of apprentice under the terms of this agreement, and will in every way within his or her power encourage and assist apprentice faithfully to perform the duties hereby imposed on him.

In Witness Whereof, The Curtis Publishing Company has caused its corporate seal to be hereto affixed, duly attested by the signature of its secretary and apprentice and his parent or guardian have hereunto set their hands and seals the day and year first above written.

Exhibit No. 27.

TRADE AGREEMENTS IN INDUSTRIAL EDUCATION OF AP-
PRENTICES IN CHICAGO.

W. M. ROBERTS.

PRESENTED AT N. E. A., ST. PAUL, JULY, 1914.
(Condensed.)

Illinois has no laws governing vocational education and none requiring or providing for apprentice training. Provisions made by boards of education for vocational training of any sort are not made in obedience to any law, but simply in response to the general demand on the part of the community.

Twelve years ago (1902) the organized carpenters, together with the employing carpenter contractors, asked the board of education in Chicago to provide instruction for the apprentices working at that trade. Later (in 1912) the electrical workers, by agreement with their employers, arranged for attendance of their apprentices at school for one-half day of each week throughout the school year. In 1913 the organized plumbers and their employers agreed upon a similar plan. There are similar groups of sheet-metal workers' apprentices and machinists' apprentices attending one-half day each week. In all instances, except in the case of two small groups of machinists' apprentices, the attendance of the apprentices at schools is in accordance with agreements made between the unions and the organizations of employers. With few exceptions there is no deduction from the wages of the apprentices for the time spent at school.

CARPENTERS' AGREEMENT.

Section 4. The contractor taking an apprentice shall engage to keep him at work in the trade for nine consecutive months in each year, and see that during the remaining three months of the year the apprentice attends school during January, February and March and a certificate of attendance from the principal of the school attended must be furnished to the Joint Arbitration Board as a compliance with this requirement, before he is allowed to work during the coming year.

The Electrical Workers' agreement was made in 1912, the Plumbers' in 1913 and the Sheet Metal Workers' in 1913. The agreement of the Electrical Workers was as follows:

It shall be compulsory upon apprentices to attend school at least one-half day each week during the school term, and the employer will pay apprentice for such time up to \$1 per week. The union shall furnish, free of charge to the apprentice, all necessary text-books and shall also provide each apprentice with a card which must be presented to the instructor at the school and signed by him each week to show that apprentice was in attendance, and this must be shown by the apprentice to the foreman or employer upon request.

The Plumbers' agreement, the exact wording of which is not available, is quoted in a letter addressed by the Master Plumbers' Association to its members, as follows:

Chicago, Ill., May 1, 1913.

Dear Sir:

In connection with the system of vocational training which was inaugurated by the board of education in the public schools April 7th, we desire to notify you that an agreement has been reached between our association and the Chicago Journeymen Plumbers' Association whereby the registered apprentices now learning the trade are to spend one-half day of each week at the Lane Technical High School, Division and Sedgwick Streets, and there to receive a theoretical course that will enable them to better understand the principles of the plumbing trades. It is understood that the employer will pay the boy for the time thus lost in attending school.

The Sheet Metal Workers' agreement is also quoted in a letter sent to contractors by the joint arbitration board:

Chicago, September 19, 1913.

Sheet Metal Contractors of Chicago,
Dear Sirs:

You received a communication from the superintendent of the Chicago public schools, under date of July 20th, giving a synopsis of the work that is being done to advance the welfare of apprentices by giving them a technical as well as a practical education in their chosen trade. This project has the hearty approval of employers constituting the Sheet Metal Contractors Association of Chicago, as well as of the Sheet Metal Workers' Union No. 73, and if you have an apprentice in your employ, we respectfully request that you extend to him the privilege of attending this school. If this does not meet with your approval, will you kindly notify the undersigned, stating objections. We might add that in the future, indentures for apprentices will be granted only upon the condition that this privilege be given the apprentices.

Yours very truly,

Joint Board of Arbitration.

Sheet Metal Workers' Union No. 73 and Sheet Metal Contractors.
E. D. Markham, Secretary.

Practical teachers, that is, teachers experienced in the trades, are in charge of all work directly related to the trade. The instruction is mostly technical, with enough practical shop work to illustrate standard methods of construction.

Altogether about 650 apprentices are in attendance, and other classes are to be organized next fall. The plan is growing in favor with both unions and employers.

The unions require attendance of the apprentices at school. The carpenters add two days to the apprentice time for each day's absence from school; they also withhold working cards in cases of insubordination or failure to do the required work. The other unions concerned have similar methods of enforcing attendance and good conduct.

The following letter from the Joint Arbitration Board of the carpenters is self-explanatory:

Chicago, December 9, 1912.

To the Carpenter Apprentices:

In accordance with the apprentice rules: you are required to attend day school during January, February and March, 1913, and the following directions are given for your guidance in this matter:

Apprentice day schools will open Monday, January 6th, at the Crane Technical High School, Oakley Avenue and Van Buren Street, and the Lane Technical High School, Division and Sedgwick Streets. Apprentices of the first and second years will attend the Crane school, those of the third and fourth years will attend the Lane school.

You will be required to report January 6th, at the school to which you are directed, promptly at 9 a. m., and thereafter at such time as required by the principal of the school.

Attendance cards will be issued to the apprentices at the end of each week, and your contractor is instructed to deduct from your pay one-fifth of the week's wages for each day of unexcused absence; the cards to be signed by your contractor.

You will be required to conform in every respect to the rules governing the schools which you attend.

No exception will be made from the above directions without a permit from the joint arbitration board.

Joint Arbitration Board.

(Signed)

Chas. Theo. Green, President.
J. W. Quale, Secretary.

As a disciplinary measure, at the close of the term in 1914, the carpenters' joint arbitration board required about 30 apprentices who had failed in their school work to continue for two weeks in attendance without pay, in addition requiring them to bear the expense of the instruction, which was about \$160 for the 30 apprentices.

In their support of the continuation schools for their apprentices, the unions seem to recognize the fact that unless the boys coming up into the trade are trained in the science of their calling and are able to do good head work as well as hand work, the trade unions can not rightfully persist in their claims to be the only source of supply in Chicago for the skilled-labor market. On their part, the employers see in this school plan a means of insuring them each year a supply of young men well grounded in the theory underlying their calling and capable of advancing as they gain experiences into the positions in their employ which require more than the average skill and intelligence, and for which men are hard to find. While these views of the matter are in a sense selfish, yet on both sides there is an apparent interest in the boys themselves, for many of them are the sons of the journeymen or contractors.

Exhibit No. 28.

SPECIAL AGREEMENT BETWEEN CINCINNATI TYPOGRAPHICAL UNION NO. 3 AND THE NEWSPAPERS.

Section 1. Each newspaper office shall be allowed one apprentice for every ten journeymen printers in their employ, or major fraction thereof, the limit in no office to exceed three. Apprentices shall at all times be under the supervision of the Chairman. They shall not be less than 16 years of age at the beginning of their apprenticeship and shall serve for a term of four years. No apprentice shall be allowed to work more than six days of eight hours each per week, except during the first year of his apprenticeship when his hours of labor shall be fixed by the foreman. When an apprentice enters the employment of a daily newspaper office, he shall be possessed of a common-school education, and shall be subjected to an examination to be conducted by the chairman of the chapel, the foreman of the composing-room and the manager of the office as to his qualifications for becoming a competent workman; and if it be found that good reason for such action exists, the apprenticeship may be at once terminated, at the option of either party; but if the applicant be found to be possessed of the proper qualifications, he shall continue his term of apprenticeship. The chairman of the chapel shall furnish the secretary-treasurer of the union, upon a blank form to be furnished by the union, with the name and age of the apprentice, the date of beginning his apprenticeship and such other information as may be required, which document shall be kept on file at the headquarters of the union.

Section 2. (a) In order that he may be given full opportunity to become a competent workman, each apprentice during the first year may be required to perform general work in the composing-room at the direction of the foreman. (b) In the second year an apprentice shall be employed at least 50 per cent of his time and at composition and distribution. (c) In the third year an apprentice shall be employed at hand composition and all intricate handiwork of the craft. (d) In the first six months of the fourth year an apprentice shall be employed at hand composition and all the intricate handiwork of the craft. In the last six months of his apprenticeship he may be employed in operating a typesetting machine and may be given opportunity to acquire knowledge of all classes of composition on the machine. (e) The terms of apprenticeship to expire in successive years, no two in the same year.

Section 3. Compensation for apprenticeship shall be: For the first year one-fourth journeymen wages; for the second year, one-third journeymen wages; for the third year, one-half journeymen wages; and for the fourth year, two-thirds journeymen wages.

Exhibit No. 29.

SECTIONS OF CONSTITUTION OF THE CINCINNATI TYPO-
GRAPHICAL UNION NO. 3.

Section 1. An apprentice, within the meaning of this agreement, is a beginner at the printing trade, one setting type and doing such other work going to make up a compositor's vocation; one who puts away slugs or leads or does any work in the composing-room to be considered an apprentice.

Section 2. Apprentices may be employed in printing establishments as follows: One for the establishment and one for every five journeymen regularly employed.

Section 3. In establishments where the number of journeymen fluctuates with the increase and decrease of business, an average may be taken, which average shall, before going into effect, be submitted to the business committee for their approval, which if given shall be in writing.

Section 4. The term of apprenticeship shall be four years.

Section 5. All apprentices shall be registered on the books of the union and of the employing printers of its jurisdiction, and be at all times under the control of the office committeemen.

Section 6. Apprentices must be 16 years old, and no one under 20 years of age shall be admitted to membership in this union, provided such apprentices measure up to the necessary qualifications of the committee on apprentices of said union.

Section 7. In the event of an apprentice becoming laid off or discharged for the reason of reduction of force, or for any other cause save dishonesty or incompetency, he shall be given a proper clearing enabling him to secure employment elsewhere.

Section 8. Apprentices shall be governed as to hours the same as journeymen members.

Section 9. All apprentices shall be encouraged to take the I. T. U. correspondence course of instruction before making application for membership in the union.

Section 10. The compensation for apprentices shall be two-thirds of journeymen's wages for the fourth year.

Section 11. In offices having machines, the I. T. U. law relative to apprentices learning machines shall govern, which reads as follows: "In machine offices under the jurisdiction of the typographical union no person shall be eligible as a learner who is not a member of the international typographical union or an applicant for membership working under permit. The time and compensation of learners shall be regulated by local unions. Provided; local unions grant permits to apprentices during the last six months of their apprenticeship, during which time they may learn the machines, and shall be subject to the rules and regulations of the local union.

Exhibit No. 30.

**AGREEMENT BETWEEN CINCINNATI STEREOTYPERS' UNION
AND LOCAL NEWSPAPER PUBLISHERS, ON APPRENTICE-
SHIP.**

Section 7. Apprentices shall not receive less than \$1.30 per day for the first year, \$1.55 for the second year, \$2.05 for the third year, \$2.30 for the fourth year and \$2.55 for the fifth year.

Section 11. Each office shall be entitled to one apprentice and an additional apprentice where eight journeymen are employed, but no office shall be entitled to more than two apprentices.

Section 12. Apprentices shall serve five years before becoming journeymen and shall be subject to the same rules as to the hours of labor which govern journeymen. When an apprentice completes his time he may be employed by the office, providing there is a vacancy. If there is no vacancy the office shall be entitled to a new apprentice. No regular shall be dismissed to create a situation.

**AGREEMENT BETWEEN CINCINNATI MAILERS' UNION AND
LOCAL NEWSPAPER PUBLISHERS, ON APPRENTICESHIP.**

Second: Apprentices shall be limited to one to every five men or major fraction thereof, but no office shall be allowed more than four (4) apprentices.

Fourth: Apprentices shall serve at least four (4) years as such and may be placed at any task about the mailing-room, but no apprentice shall be adjudged as a journeyman until he has served the full term of four (4) years.

Exhibit No. 31.

ORIGINAL CONTRACT AND WAGE AGREEMENT OF CINCINNATI
PRINTING PRESSMEN'S UNION NO. 11, OF CINCINNATI,
OHIO, AND VICINITY.

Section 1. This agreement, made and entered into this — day of —, A. D. 19—, by and between the undersigned representatives of the various employers of the city of Cincinnati and vicinity, hereinafter enumerated and hereinafter designated in this agreement as party of the first part, and Cincinnati Printing Pressmen's Union No. 11, hereinafter designated as party of the second part, shall be in force and remain in effect until —, 19—, provided, however, that on failure to agree after the expiration of this agreement, all disputed points shall be referred to arbitration, and to this end a committee of two, to represent each of the parties of this agreement, shall be appointed with power to select a fifth member, and the finding of the majority shall be binding on all parties concerned.

Section 2. It is agreed and understood that 60 days before the expiration of this agreement negotiations shall be begun for a new agreement to become effective at the expiration of this agreement.

Section 3. It is further agreed and understood that should negotiations extend past —, 19—, this agreement shall remain in effect until it shall be supplanted by another contract, but all findings shall be dated back to —, 19—.

Section 4. A joint standing committee shall be selected each year, to consist of two representatives designated by the party of the first part and two representatives designated by a majority vote of the party of the second part, and in case of vacancy, prolonged absence or refusal to represent, another shall be appointed in his place, to which committee shall be referred all questions which may arise as to the construction to be placed on any of the clauses of this agreement or any alleged violations thereof which can not be settled otherwise. Such joint standing committee shall meet when any question of difference shall have been referred to it for decision by the authorized representatives of the parties to this agreement; and should the joint standing committee be unable to agree, it shall refer the matter to the board of arbitration, the representatives of the parties of this agreement to select one arbitrator and the two to agree upon the third. The decision of the board shall be final and binding on all parties. Before any changes of this agreement may be made they must have the approval of the Cincinnati Printing Pressmen's Union No. 11 and approval of the party of the first part.

Section 5. It is agreed that the constitution and by-laws of the Cincinnati Printing Pressmen's Union No. 11 as existing —, 19—, and the constitution and by-laws of the International Printing Pressmen's Union of North America, as existing in effect on —, 19—, a copy of each imprinted form is hereto attached, are made a part of this contract, subject to such changes as will not alter or affect the relations of the principals to this document during the life of this contract.

Section 6. The party of the first part further agrees that 48 hours, divided into six days of eight hours each between the hours of seven a. m. and 6 p. m. shall constitute a week's work; and for any and all services demanded beyond eight hours each day or not within the time specified, shall be paid for at the rate of time and a half, and all work done on Sundays or legal holidays shall be paid for at the rate of double time.

Section 7. Overtime is work performed consecutively in excess of the regular established hours per day or night.

Where forces are employed at night, 9 hours constitutes a night's work as follows: Monday, Tuesday, Wednesday, Thursday and Friday nights, 45 hours per week, the night force to receive \$2.50 in addition to the regular day's scale.

Section 8. All time in excess of or in addition to the five nights hereinbefore named, or any portion thereof, shall be overtime and shall be paid for at the rate of time and a half, computed on the regular pay for regular night work.

Section 9. It is hereby agreed by said party of the second part that for and in consideration of the covenants entered into and agreed to by the said parties of the first part, the said party of the second part at all times during the life of this agreement will truly and faithfully discharge the obligations imposed on it by furnishing pressmen to operate the presses in the press-room of the party of the first part in a workmanlike and satisfactory manner.

Section 10. The party of the first part agrees to employ in his press-room only members of the Cincinnati Printing Pressmen's Union No. 11 to operate their presses.

Section 11. Whenever the party of the second part shall be unable or shall fail to fulfill its agreement in this respect, after being notified by the foreman of the party of the first part, the parties of the first part shall be entitled to obtain anywhere, provided he has the approval of the Cincinnati Printing Pressmen's Union No. 11, the help required.

Section 12. The party of the second part further agrees that its members shall not leave the services of any of the firms constituting the party of the first part until sufficient notice to the foreman of the party of the first part shall have enabled them to fill the vacancy without interruption to his services.

Section 13. It is agreed and understood that it is to the interest of all parties concerned in this agreement that the press-room shall be kept in a sanitary condition at all times.

Section 14. The party of the first part agreeing to furnish such necessary facilities as will tend to the observance of this provision and the party of the second part agreeing to make the necessary regulations to co-operate with the party of the first part in this respect.

Section 15. The Cincinnati Printing Pressmen's Union No. 11 shall not make any rules permitting any other offices in Cincinnati or vicinity coming under its jurisdiction to operate its press-rooms differently in any respect than this contract, unless it is for the purpose of organizing, which must be by mutual consent.

SCALE OF WAGES.

(Eight-Hour Day, 48 Hours Per Week.)

Two single-cylinder presses, size less than 54 inches, book and job work	\$22.00
Two single-cylinder presses, larger size than 53 inches, book and job work	23.00
Two single-cylinder presses, size less than 53 inches, label work	22.00
Two single-cylinder presses, size larger than 53 inches, label work	24.00
One double-cylinder or two-color press, size less than 53 inches	24.00
One double-cylinder or two-color press, size larger than 53 inches	26.00
One perfecting press	22.00
One rotary web press, single roll	25.00
One rotary web press, double roll	27.00
One rotary web press, process or label work, first position....	28.00
One rotary web press, process or label work, second position.	24.00
One single-color rotary press.....	24.00
One two-color rotary press	26.00
One offset press, size less than 53 inches	24.00
One offset press, size larger than 53 inches	26.00
One single-color Harris press	17.00
One two-color offset press	26.00
One two-color Harris press	19.00
Two single-color Harris presses	19.00
Four Harris envelope presses	19.00
One autopress	18.50
Two autopresses	22.50
Two Meislor-Kidder presses	17.00
One or two ticket machines	19.00
Four bag presses	25.00
Four patent-inside blanket presses	25.00
One or two platen presses	14.50
Three platen presses	15.50
Four platen presses	17.50
Five platen presses	19.50

Note—No platen pressman shall operate more than five platen presses, and in offices where there are two platen pressmen employed, the foreman in charge shall receive journeyman's scale

One cylinder and two platen presses

One Cox duplex press

One Goss flat-bed press

Note—The foreman in charge of the press-room shall receive

No pressman's or foreman's salary to be reduced below what he was receiving previously, before the adoption of this scale of wages.

Pressmen subbing on day or night forces for three days or less shall receive fifty cents in addition to the regular day or night scale.

Exhibit No. 32.

**RULES OF THE CINCINNATI PRINTING PRESSMEN'S UNION NO.
11 IN REGARD TO APPRENTICES.**

The number of press feeders allowed shall be, one press feeder to every five journeymen feeders employed and actually working.

The agreement between the Pressmen's Union No. 11 and employers, regarding apprentices is as follows:

Apprentices in the meaning of this agreement are members from the press assistant's union who are operating one cylinder press under the jurisdiction of a journeyman.

No member of an assistants' union shall be eligible to become a member of the pressmen's union unless he has spent four years in the press-room under the jurisdiction of the International Printing Pressmen and Assistants' Union.

It shall be the duty of the journeymen to instruct the apprentices and help them in every way to become efficient.

The number of apprentice pressmen allowed shall be one apprentice to every four journeymen pressmen employed and actually working; and in no instance shall any one office be allowed more than five apprentice pressmen.

All apprentice pressmen shall be registered by the union and be in possession of an apprentice card before being presented to a journeyman, and in no case shall the privilege of an apprentice pressman be granted where it would displace a journeyman in any office.

The scale for registered apprentices shall be as follows:

For the first year, magazine or flat-bed presses.....	\$17.00
For the second year	18.50
For the third year	20.00

At the end of the fourth year, journeymen's scale.

Apprentices shall be governed as to hours, regulation of the office and the scale of the union, the same as journeymen members.

This contract shall become operative on the — day of —, 19—, and shall continue in full force and operation until —, 19—.

Exhibit No. 33.

CONTRACT AND WAGE AGREEMENT OF CINCINNATI PRESS ASSISTANTS' UNION NO. 17, OF CINCINNATI, OHIO, AND VICINITY.

This agreement, entered into this — day —, 19—, by and between the —, of Cincinnati, party of the first part, and Cincinnati Press Assistants' Union No. 17, party of the second part.

Witnesseth: 1. The party of the first part agrees to employ in — press-room — only members of the party of the second part coming under the jurisdiction of the International Printing Pressmen and Assistants' Union.

2. It is hereby agreed by the party of the second part that all matters not herein agreed to shall be adjusted by conciliation, and if unable to conciliate, shall be settled by arbitration. Party of the first part to be represented by one member on said board of arbitration and party of the second part to have one; they to have power to select a third, which shall constitute the board of arbitration. The decision arrived at by said constituted board of arbitration shall be accepted by all parties to this contract as final and binding during the life of this agreement.

3. It is agreed by the party of the second part to supply the party of the first part with competent help in accordance with the wage agreement hereinafter set forth.

4. It is agreed by parties mentioned above that the workday shall be 8 hours per day or 48 hours per week. All time in excess of the 8-hour day shall be paid for at the rate of time and one-half up to 12 o'clock p. m. After 12 o'clock, double time; Sundays and holidays shall be paid for at the rate of double time. All time in excess of or in addition to the five nights hereinafter named or any portion thereof, shall be overtime and shall be paid for at the rate of time and one-half computed on the regular pay for regular work.

The regular holidays shall be New Year's Day, Decoration Day, Fourth of July, Labor Day, Thanksgiving Day and Christmas Day.

SCALE OF WAGES.

Cylinder feeders	\$12.00
Apprentice pressmen	15.00
Helpers or automatic-feeding-machine tenders	13.00
Provers on engravers' proofs, cylinder and job	15.00
Web pressmen's assistants	15.00
Second assistants	12.00
Folding-machine operators	15.00
Each additional folding machine \$2.00 more.	
Newspaper feeders (patent inside).....	15.00

Scoring Machines. Pressmen Running Two-Cylinder.

Scoring machines	\$16.00
Helpers on scoring machines	12.00
Job pressmen on one or three scoring presses	12.00
Feeders on scoring machines	12.00

Job pressmen running more than three scoring machines shall be paid \$1 for each additional machine.

Embossing.

Pressmen in charge of 6 embossing presses	\$21.00
First assistant pressman	14.00
Second assistant pressman	11.00

Magazine, Commercial, Web Presses.

First assistant pressman	\$15.00
Second assistant pressman	12.00
Third assistant pressman	11.00

This scale of wages to prevail until June 30, 1910, after which date the scale shall be \$1.50 per week in addition to the scale above.

Overtime.

Overtime is work performed consecutively in excess of the regular established hours of labor, per day or per night. Where a night force is employed, 9 hours constitutes a night's work as follows: Monday, Tuesday, Wednesday, Thursday and Friday nights—45 hours per week.

The night scale shall be \$2 in excess of the day scale.

When work is performed on the eve of a holiday, single time shall apply for regular night only. If work is performed on the following night, double time shall apply from midnight to midnight of said holiday. The number of apprentice feeders allowed shall be one apprentice feeder to every five journeymen feeders employed and actually working.

This contract shall become operative on the ____ day of ____, 19—, and shall continue in full force and operation until ____, 19—.

GENERAL REGULATIONS.

Section 1. Wages must be paid weekly, in current funds. Each and every member of this union must refuse to perform any work whatsoever in an office which has not paid wages in full, in current funds for previous week's work within three working days after the last work day of said previous week, said prohibition to remain on said office until all members shall have been so paid.

No further action by this union shall be necessary when wages have not been paid.

Section 2. It is agreed by the party of the first part that notice of the observance or non-observance of each Saturday half-holiday shall be posted on the day preceding, before the close of the day's work and that the notice so posted shall be adhered to except in case of absolute necessity or extraordinary emergency.

Section 3. When put to work after the regular hour of commencing the day's work, the full day must be paid for in all cases unless a full day is given the succeeding day, in which event the employe can only claim a fractional part of a day for the first day and a full day for the succeeding day; provided that an employer can not claim exemption from this rule on account of the employe's incompetency if the employe is allowed to work three hours in the office.

Section 4. Deduction for lost time shall be in exact proportion for wages paid.

Section 5. When overtime is to be worked, a notice must be posted before the completion of the regular day's work. When work is performed on the evening of a holiday, single time shall apply for regular night men only. If work is performed from midnight to midnight of said holidays, double time shall be paid.

APPRENTICES.

Apprentices in the meaning of this agreement are members from the press assistants' union who are operating one cylinder press under the jurisdiction of a journeyman.

No members of an assistants' union shall be eligible to become a member of the pressmen's union unless he has spent four years in the press-room under the jurisdiction of the International Printing Pressmen and Assistants' Union.

It shall be the duty of the journeyman to instruct the apprentices and help them in every way to become proficient.

The number of apprentice pressmen allowed shall be one apprentice to every four journeymen pressmen employed and actually working, and in no instance shall any one office be allowed more than five apprentice pressmen.

All apprentice pressmen shall be registered by the union and be in possession of an apprentice card before being presented to a journeyman; and in no case shall the privilege of an apprentice pressman be granted where it would displace a journeyman in any office.

Exhibit No. 34.

A PARTIAL LIST OF CITIES IN WHICH PRINTING IS TAUGHT
IN THE PUBLIC SCHOOLS.

ELEMENTARY SCHOOLS.

Atlantic City, N. J.
Berkley, Cal.
Boston, Mass.
Chicago, Ill.
Cleveland, Ohio.
Des Moines, Iowa.
Elgin, Ill.
Fall River, Mass.
Fitchburg, Mass.
Gary, Ind.
Grand Rapids, Mich.
Louisville, Ky.
Milton, Mass.

Milwaukee, Wis.
Mishawaukee, Ind.
Newark, N. J.
New Haven, Conn.
Oak Park, Ill.
Ogden, Utah.
Pittsburgh, Pa.
Rochester, N. Y.
St. Louis, Mo.
Springfield, Mass.
Whittier, Cal.
Yonkers, Cal.

HIGH SCHOOLS.

Belmont, Mass.
Chicago, Ill.
Cleveland, Ohio.
Detroit, Mich.
Grand Rapids, Mich.
Indianapolis, Ind.

Lincoln, Neb.
Los Angeles, Cal.
New Haven, Conn.
Portland, Ore.
St. Louis, Mo.
Salina, Kan.

TRADE SCHOOLS.

Bridgeport, Conn.
Columbus, Ohio.
Denver, Col.

New Haven, Conn.
Philadelphia, Pa.
Worcester, Mass.

NORMAL SCHOOLS (By States).

Alabama—Camp Hill, Southern Industrial School.
Colorado—Greely, State Teachers' College.
Illinois—De Kalb, State Normal School; Woodstock, Todd Seminary.

Massachusetts—Fitchburg, Normal School; Salem, Normal School.
New York—Plattsburg, State Normal School.

BIBLIOGRAPHY.

American Federation of Labor:

- Pamphlet on Industrial Education.
- Report of Committee on Industrial Education, compiled by C. H. Winslow.
- Report of Committee on Industrial Education, August, 1912.

Boston, Mass.:

- North End Union School of Printing—The Apprenticeship Bulletin, June-July, 1914.

Buffalo, N. Y.:

- Vocational School of Printing—The Ben Franklinite, March, 1914.
- Vocational School of Printing—Unit Courses of Instruction.
- Bureau of Vocational Guidance and Industrial Education of the Chamber of Commerce—The Graphic Arts (pamphlet).

Cincinnati Typographical Union:

- Constitution and By-Laws.
- Scale of Prices for Job Offices.
- Agreement (1914) with Cincinnati Daily Newspaper Union.

Cleveland Public Schools:

- Elementary Industrial School (pamphlet, May, 1913).
- West Technical High School—Building and Equipment, with outline of the courses of study, 1911.
- West Technical High School—Course of Study in Printing.

Columbus, Ohio:

- Columbus Trade School—Course of Study and General Statements, 1913-14.
- Columbus School of Printing—The Trade School Boy as He Really Is, by Paul Carty.

Curtis Publishing Co.:

- Composition Division, Pre-Apprenticeship Agreement.

Donnelly, R. R. & Sons (The Lakeside Press):

- The School for Apprentices.

Hitchcock, F. H.:

- The Building of a Book.
- Cushing, J. Stearns, Hand Composition and Electrotyping.
- Berwick, W. J., Hand Composition and Electrotyping.

Miller, L. W.:

- The Relation of the Trade School to the Public School. Address delivered at the Apprenticeship Festival of the School of Printing, North End Union, Boston, November 22, 1907.

National Association of Manufacturers:

- Report of the Committee on Industrial Education (Continuation and Trade Schools; Apprenticeship; State and Local Control; Pre-Vocational Courses in Elementary Schools).
- Report of the Committee on Industrial Educational, H. E. Miles, chairman, May, 1913.

National Society for the Promotion of Industrial Education:

Bulletin No. 17; The Short Unit Course for the Evening Trade School and Part-Time Extension School, October, 1913.

New York State:

Bureau of Labor Statistics, Annual Report, Part 1, Industrial Training.
Partridge, C. S.
Electrotyping.
Stereotyping.

Porter, H. P.:

A Message to Chicago Printers (Address delivered before annual meeting of Chicago Typothetae, January 23, 1914).

Royal Commission on Industrial Training and Technical Education:

Commissioner's Report, Vol. 2, Parts 3 and 4.

Russel Sage Foundation:

Women in the Bookbinding Trade, by Van Kleek.

Sayward, W. H.

The Relation of the Trade School to the Trade (Address delivered at graduation exercises of the North End Union Plumbing School, Boston, May 5, 1908).

U. S. Commissioner of Labor:

Twenty-fifth Annual Report (1910) Industrial Education.

United Typothetae of America:

Report of Committee on Apprentices, October 22, 1913.

Report of Committee on Apprentices, June, 1914—The Apprentice Printer.

Van Cleave, James W.:

Industrial Education as an Essential Factor in Our National Prosperity. (Address.)

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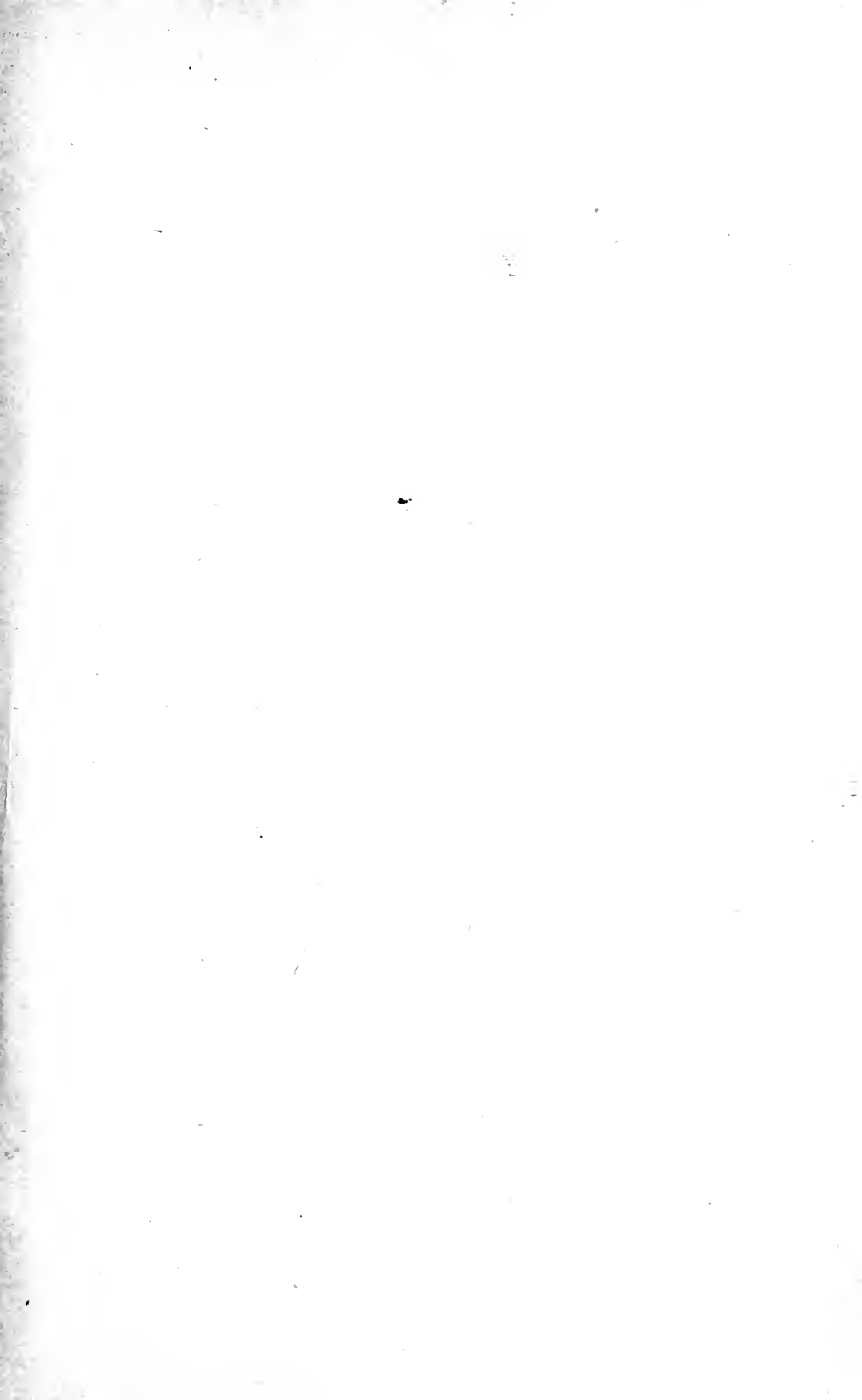
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