The schools of Calaveras County, California, are organized on the 8-4 basis. None of the elementary schools have an industrial-arts program. The purpose of this study has been to seek methods of satisfying the need for such a program.

To accomplish this purpose three steps were followed: (1) the general content to be used in the proposed program was determined; (2) the best means of providing the program was determined; and (3) recommendations were formulated on the basis of the findings. The determination of the general content was accomplished by examining current literature, courses of study, and state bulletins and by visiting counties with programs in operation. Determining the best means of providing the program was somewhat more difficult. What little information was available from literature was supplemented by that obtained from interviews with leaders in rural elementary industrial arts in California. The findings were further expanded by submitting them to a jury of experts for recommendation.

The desirability of an elementary school industrial-arts program was established by findings in literature and later confirmed by a jury of experts. Four California counties were found which were conducting elementary school industrial-arts programs in their rural schools. The heads of these programs were interviewed to determine the nature of the programs. All four counties were using mobile shops for all or part of the service.

The general geographical features and financial conditions were compared with those same factors in Calaveras County. Some similarity was found.
A summary of the initial findings was sent to a jury of nine experts, together with a short questionnaire. The jurors were unanimous in their opinion that an elementary school industrial-arts program was desirable in Calaveras County and that the courses in such a program should be coeducational. Seven out of nine jurors thought a mobile shop should be used in such a program. Two-thirds of the jurors thought an elementary school industrial-arts program would be economically possible and that industrial arts should be a required course at some level in the elementary schools. All nine jurors felt that the program should include grades seven and eight. Eight jurors recommended the inclusion of grade six. Three jurors felt all grades from kindergarten through eight should be included.

Some of the chief conclusions are as follows:

1. Industrial arts has an important contribution to make to rural school children;
2. Industrial arts has an established place in elementary schools of the 8-4 plan;
3. A program of industrial arts is desirable in the elementary schools of Calaveras County;
4. The mobile shop has made an important contribution to industrial arts in rural communities with limited facilities;
5. Industrial arts on the elementary school level should be exploratory in nature and the content below grade seven is usually integrated with classroom work in social studies;
6. Courses of industrial arts on the elementary school level should be coeducational;
7. Reorganization of the schools of Calaveras County into larger administrative areas would facilitate the initiation of an industrial-arts program in the elementary schools;
8. The financial status of the present elementary school districts in Calaveras County would have to be considered seriously before starting an industrial-arts program.

The more important recommendations made are as follows:

1. An industrial-arts program for the elementary schools of Calaveras County should be organized as soon as possible;
2. The program should be exploratory in nature and should use the general shop type of organization;
3. It is recommended that a light vehicle, such as a station wagon or a pick-up truck, equipped with hand tools be used to start with;
4. The State Consultant of Industrial Arts for California should be asked for assistance in setting up the program;
5. One of the local state colleges should be called upon to help in the organization of a program. Both San Jose State and Fresno State have offered to assist.
AN INDUSTRIAL ARTS PROGRAM
FOR THE ELEMENTARY SCHOOLS OF
CALAVERAS COUNTY, CALIFORNIA

by

RALPH ROSWELL WHEELER

A THESIS
submitted to the
OREGON STATE COLLEGE

in partial fulfillment of
the requirements for the
degree of

MASTER OF SCIENCE

June 1953
Date thesis is presented  August 6, 1952
Typed by Olive Sandgren
ACKNOWLEDGEMENT

The writer wishes to express appreciation for guidance and encouragement given him by Dr. Horace O. Schorling and Professor George B. Cox; for time, advice, and material, freely given, by the many educators who contributed to the study; and especially for encouragement and assistance given by his wife, Blanche.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>CHAPTER I. INTRODUCTION</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Statement of the Problem</td>
<td>1</td>
</tr>
<tr>
<td>Purpose of the Study</td>
<td>2</td>
</tr>
<tr>
<td>Location of the Study</td>
<td>3</td>
</tr>
<tr>
<td>Sources of Data and Methods Employed</td>
<td>8</td>
</tr>
<tr>
<td>Definition of Terms</td>
<td>8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CHAPTER II. BACKGROUND FOR THIS STUDY</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industrial Arts in California</td>
<td>11</td>
</tr>
<tr>
<td>Rural Education</td>
<td>16</td>
</tr>
<tr>
<td>Rural Elementary School Industrial Arts</td>
<td>19</td>
</tr>
<tr>
<td>Summary of Literature</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>30</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CHAPTER III. THE STUDY</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preliminary Investigation</td>
<td>32</td>
</tr>
<tr>
<td>Geographical Areas Included in the Study</td>
<td>34</td>
</tr>
<tr>
<td>The Interviews</td>
<td>35</td>
</tr>
<tr>
<td>Programs in Operation</td>
<td>37</td>
</tr>
<tr>
<td>Duties of Mobile Shop Teachers</td>
<td>38</td>
</tr>
<tr>
<td>Mobile Shops and Equipment</td>
<td>41</td>
</tr>
<tr>
<td>Elementary School Shops</td>
<td>43</td>
</tr>
<tr>
<td>Administration and Finance</td>
<td>44</td>
</tr>
<tr>
<td>Schedule of Classes</td>
<td>45</td>
</tr>
<tr>
<td>Curriculum</td>
<td>46</td>
</tr>
<tr>
<td>A Comparison of Conditions in Calaveras County with Those Found in the Four Counties Conducting Mobile Shop Programs</td>
<td>48</td>
</tr>
<tr>
<td>The Jury of Experts</td>
<td>51</td>
</tr>
<tr>
<td>Opinions of Jury of Experts as Shown by Replies to Questionnaire</td>
<td>52</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CHAPTER IV. CONCLUSIONS AND RECOMMENDATIONS</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conclusions</td>
<td>59</td>
</tr>
<tr>
<td>Recommendations</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>62</td>
</tr>
<tr>
<td>Section</td>
<td>Page</td>
</tr>
<tr>
<td>------------------</td>
<td>------</td>
</tr>
<tr>
<td>BIBLIOGRAPHY</td>
<td>64</td>
</tr>
<tr>
<td>APPENDICES</td>
<td></td>
</tr>
<tr>
<td>Appendix A</td>
<td>67</td>
</tr>
<tr>
<td>Appendix B</td>
<td>93</td>
</tr>
</tbody>
</table>
LIST OF TABLES

Table                               Page
I  Elementary School Districts of Calaveras County in 1950 7
II Elementary School Districts of Calaveras County in 1950 33
III A Comparison of Populations, Areas in Square Miles, Lowest Elevations, and Highest Elevations of the Counties Included in the Study 35
IV Names and Titles of Those Interviewed 36
V Length of Time County Programs Had Been in Operation in 1951 37
VI Number and Types of Vehicles Used by Counties 38
VII Maximum Time Spent Traveling to Elementary Schools by Each of Three Counties 40
VIII Average Distance Traveled Per Day by San Diego Mobile Shops 40
IX Mobile Shop Equipment by Counties 42
X Cost of Industrial-Arts Service to Each Elementary School for the School Year 1950-51 44
XI Areas Taught in Mobile Shop Programs 47
XII A Comparison of A. D. A. for 1950-51 of School Districts Served by County Industrial-Arts Programs with Calaveras Elementary School Districts and the Twelve Largest Calaveras Elementary School Districts 49
Table

<table>
<thead>
<tr>
<th>Page</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>A Comparison of the Mean Assessed Valuation of Elementary School Districts Using County Industrial-Arts Service with the Mean Assessed Valuations of all Calaveras Elementary School Districts and with the Richest One-Half of the Calaveras Elementary School Districts</td>
</tr>
<tr>
<td>52</td>
<td>The Desirability of an Industrial-Arts Program in 8-4 Plan Elementary Schools</td>
</tr>
<tr>
<td>53</td>
<td>The Desirability of an Elementary School Industrial-Arts Program in Calaveras County</td>
</tr>
<tr>
<td>53</td>
<td>Economic Possibility of an Elementary Industrial-Arts Program in Calaveras County</td>
</tr>
<tr>
<td>54</td>
<td>Desirability of Using a Mobile Shop in Calaveras County</td>
</tr>
<tr>
<td>55</td>
<td>Grade Levels for an Elementary School Industrial-Arts Program in Calaveras County as Checked by Jurors</td>
</tr>
<tr>
<td>56</td>
<td>Desirability of Coeducational Classes in an Elementary School Industrial-Arts Program in Calaveras County</td>
</tr>
<tr>
<td>57</td>
<td>Desirability of Making Industrial Arts a Required Course in Elementary Schools of Calaveras County</td>
</tr>
<tr>
<td>58</td>
<td>Grade Levels at which Industrial Arts Should be Required in an Elementary School Program</td>
</tr>
</tbody>
</table>
## LIST OF MAPS

<table>
<thead>
<tr>
<th>Map</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Counties Involved in Study</td>
<td>4</td>
</tr>
<tr>
<td>2. Elementary Schools of Calaveras</td>
<td>5</td>
</tr>
<tr>
<td>County</td>
<td></td>
</tr>
</tbody>
</table>
AN INDUSTRIAL ARTS PROGRAM
FOR THE ELEMENTARY SCHOOLS OF
CALAVERAS COUNTY, CALIFORNIA

CHAPTER I

INTRODUCTION

Calaveras County is somewhat better known for its past accomplishments than for any recent activities. Calaveras of today may not be as spectacular as the Calaveras reflected in the stories of Mark Twain and Bret Harte, but it probably makes a greater contribution to society. Recent growth in the West has brought about an economic uplift in the lumber, cement, and cattle industries of the county. As in the case of many other areas, the schools have not kept up with the growth of the community. Exactly one-half of the elementary schools in Calaveras County in 1950 were one-teacher schools; and some of the teachers did not have regular California teaching credentials.

It is understandable then, that no industrial-arts subjects are taught in the elementary schools. It would be difficult indeed for a school of twenty pupils to offer general shop in grades seven and eight as is commonly done in junior high schools.

It is not the purpose of this study merely to criticize; but to investigate the possibilities of improving the situation. If industrial-arts courses are
to be offered, either the schools will have to be larger, and consequently fewer, or some program must be offered on a sharing basis by an organization larger than the small elementary school district.

Statement of the Problem. At present Calaveras high school pupils reach the ninth grade with no experience in industrial arts. The problem dealt with in this study is an examination of the possibilities of putting industrial arts into the curricula of the elementary schools of Calaveras County.

Industrial arts generally enters the school curriculum as a special subject in grade seven. This is undoubtedly due to the influence of the subject matter separation at this level. Although Calaveras County uses the eight-four plan, industrial arts should be offered in grades seven and eight.

This study is primarily concerned with grades seven and eight in rural communities. Although the desirability of an industrial-arts program in the junior high school is widely recognized, rural schools using the 8-4 plan have been slow in introducing it.

Purpose of the Study. The purpose of this study has been to seek methods of satisfying the need for an industrial-arts program in the elementary schools
of Calaveras County. To accomplish this purpose, three steps were used: (1) selection of the best means of providing the program, (2) selection of the general content to be used in the proposed program, and (3) formulation of a recommended program based on the findings.

Location of the Study. From Mr. O. D. Davis, who at the inception of this study was State Consultant of Industrial Arts for California, a list of four rural counties with elementary school industrial-arts programs was obtained. These counties were Imperial, Kern, San Diego and Santa Clara. Later it was discovered that Kings County had maintained a county elementary industrial-arts program but had abandoned it at the end of one year. The location of these five counties and Calaveras County are shown on Map 1. Map 2 shows Calaveras County with the locations of the twenty-four elementary schools.
CALIFORNIA
COUNTIES STUDIED

1. CALAVERAS
2. SANTA CLARA
3. KINGS
4. KERN
5. SAN DIEGO
6. IMPERIAL

Map 1.
Calaveras County is located in the Sierra Nevada Mountains. The western part is in the foothills and the eastern part extends almost to the crest of the Sierra Nevada Range. The lower elevations are devoted primarily to agriculture (mostly beef cattle). The higher elevations are mainly forests of valuable ponderosa and sugar pine, red and white fir, and cedar. The County Seat, San Andreas, is the location of a cement plant which employs a large portion of the local residents. The two largest communities in Calaveras County are San Andreas and Angels Camp; both have populations of about 1,500.

Because of the mountainous nature of the county and the poor condition of many of the roads, transportation is a major problem in the schools. The general status of the elementary schools of Calaveras County can be described generally as small and inadequate. Some of the schools have no plumbing. Of the twenty-four, twelve are one-teacher schools. Many of the teachers are inadequately prepared for teaching. More detailed information is shown in Table I.
An examination of the above table reveals a common fault in rural education; small schools inadequately financed. Out of all the elementary schools in the county only one had enough teachers so that there was one for each grade. There were six one-teacher
schools within a radius of ten miles of Valley Springs; and furthermore, the high school buses have used the roads between these communities and Valley Springs for several years.

All of these factors and their affect on the problem are discussed in more detail in Chapter III.

Sources of Data and Methods Employed. Books and periodicals were examined for material applicable to the problem at hand. The problem was discussed with the County Superintendent of Calaveras County, Mr. Charles Schwoerer, who expressed an interest and willingness to help in the study. Personal interviews were arranged with the heads of the County Industrial Arts Department of the four counties studied. The interview form used is included in Appendix A. A jury of experts was used to help evaluate the findings of the study and make recommendations on the basis of the findings.

Definition of Terms.

Area - An area is a subdivision of a general shop usually characterized by one broad industry or craft such as: wood area, electricity area, or leather area. The area can, but does not always, involve a physical division of the shop.
Mobile Shop - A mobile shop is a traveling unit usually built into a truck or trailer and driven from school to school by the teacher. The individual school frequently supplies a room with benches and a few small tools.

Unit Shop - A unit shop is a single-area shop usually representing one trade or industrial-arts subject field; such as auto mechanics, printing, or mill cabinet.

General Shop - A general shop is a multi-area shop which provides a wide variety of experience in several industrial fields. A general shop, as referred to in this study, is a shop in which work is going on in more than one area at any one time. A shop containing areas in woodwork, metalwork, and electricity is classified as a general shop.

Limited General Shop - A limited general shop is a multi-area shop in which all areas of work are closely related. A shop containing areas in sheet metal, forging, and welding is classified as a limited general shop.

Elementary School - For the purpose of this study, and unless otherwise noted, an elementary school shall be interpreted to include grades one
through eight.

**Rural** - The term rural in this study has been used in a rather broad sense. In general however, rural can be understood to include those parts of the counties studied not lying within the boundaries of cities of 2,500 or more population. This definition would include all of Calaveras County.
CHAPTER II
BACKGROUND FOR THIS STUDY

In days gone by a youngster received his early manipulative training at home helping to supply the necessities of living. As our country changed from an agricultural nation to an industrial nation fewer and fewer household items were made at home. The factory removed much industry from the home and small local shops where children could observe and take part in production. Also, industrial workers became more and more in demand. The beginning and the gradual acceptance of manipulative work in schools during the 1870's and 1880's was in direct response to the need for industrial knowledge and skill. The first manual training high school was established by Professor C. M. Woodward in St. Louis in 1879.

Bennett (4, pp. 351-2) described the course of instruction as follows:

The course of instruction, the making of which was a most important factor in the success of the school and, in fact, constituted the distinctive feature of this new type of secondary school, consisted of five fundamental lines of study carried on simultaneously:

1. Mathematics
2. Science
3. Language
4. Drawing
5. Shopwork
Early work in manual training consisted primarily of exercises. In woodwork a boy squared a block of wood and then made a series of twenty wood joints before he was allowed to construct a bench project.

As time went by the general education value of manual training became evident. It was seen that training might be given which would provide a start toward any one of several industrial occupations. This idea, and other new concepts, brought about a change in emphasis; as a consequence, the term "industrial arts" was suggested by Charles R. Richards. (26, pp. 32-33)

We are rapidly leaving behind the purely disciplinary thought of manual training. Now we are beginning to see that the scope of this work is nothing short of the elements of the industries fundamental to modern civilization.

After the signing of the Smith-Hughes vocational education act by President Wilson in 1917 the specific occupational training aspect of industrial-arts could no longer be justified. The Smith-Hughes Act provided for federal subsidy of specific occupational training in industrial and agricultural fields of less than college grade. The trend in industrial-arts, as pointed out by William H. Stone, (3, p. 139) became more general in nature:

The tendency is strong toward laboratory or activity types of learning, general in
character, rather than the earlier specifics of skill mastery in shops. This is especially true in non-vocational levels of elementary and junior high school years.

Although the development of manipulative skills is achieved to some extent through the construction of worth-while projects, neither the skills nor the projects are ends in themselves. The projects constructed in industrial-arts shops are simply part of the method of teaching; the skills developed are rarely of salable degree.

Industrial-arts, although somewhat related to vocational education, is not specific occupational training; but an integral part of general education. This idea predominates in industrial-arts literature. In a bulletin published by the American Vocational Association (2, p. 12) the general education nature of industrial-arts is expressed as follows:

Industrial-Arts courses are part of general education and do not have a distinctly bread-and-butter justification . . . . They seek merely to sample and to explain the mechanical world to young people in the hope of developing industrial and social intelligence rather than technical efficiency. These teachers attempt to provide for their pupils such experiences, knowledges, and insights as will help them to meet the demands of average living and any calling.

A committee appointed by the Commissioner of Education (25, p. 1) reported:
Industrial Arts is a phase of general education that concerns itself with the materials, processes, and products of manufacture, and with the contribution of those engaged in industry. The learnings come through pupil's experiences with tools and materials and through his study of resultant conditions of life.

The opening paragraph of the "Guide for Industrial Arts Education in California" (9, p. 1) describes industrial-arts in the following way:

"Industrial arts is an integral part of general education. The increasing complexity of our industrial economy and the increasing amount of mechanization encountered in almost every phase of our daily living make it essential that industrial arts experiences be regarded as basic and fundamental for all youth. The growth of industrial arts education throughout the state is evidence that California educators accept this concept."

The broadening scope of industrial knowledge dealt with in each shop class is in keeping with the development of industrial-arts as a general education subject. Dr. Ralph Lee Hornbake (16, p. 10) traces this development:

"Formal discipline lost its hold after the turn of the century, hence it was no longer possible to make wholesale "transfer" claims for woodworking. Furthermore, as the school population became increasingly heterogeneous, a wide range of interests and needs had to be met. These circumstances and others, cumulatively considered, led to the multiple-activity laboratory plan."

However, as Dr. Hornbake goes on to point out, the multiple activity plan did not necessarily correct
the shortcomings of the manual training era:

The "general shop" came to be the popular version of the multiple-activity shop. Although the plan itself did not restrict either the range of industries represented nor the types of learning activities provided, in practice, woodworking and metalworking predominated and emphasis continued to be placed upon tool operations and manipulative skills. A careful observer would note that the general shop, as administered, was merely a series of unit shops with the partitions removed. In fact, if the "unit" facilities within the general shop were adequate, the teacher would operate the shop one unit at a time. Industrial phenomena such as invention, experimentation, and planning were as likely to be overlooked in the general shop as they were in the displaced manual training unit shop.

As a matter of explanation, it should be pointed out that the general shop can be operated in any of several different manners. One method is to operate each area in the shop as a separate unit. As pointed out by Dr. Hornbake, the result of such an organization is in reality a series of unit shops. However, the generally accepted definition of a general shop is a shop in which instruction is being given in several areas at the same time by one teacher. Newkirk (21, p. 15) makes this clear in his book "Organizing and Teaching the General Shop."

Shops that are planned and equipped to teach two or more distinct types of shopwork at the same time under one teacher are general shops. For example, a shop which is equipped
to teach metalwork, woodwork, electricity, plastics and drafting at the same time under one teacher is a general shop.

Although not all general shops are conducted as a series of unit shops, ignoring everything else but tool skills, there has been enough holdover of manual training philosophy so that leaders such as Dr. Warner at Ohio State were prompted to organize a multiple-activity program incorporating, as they feel, the true philosophy of industrial arts. Dr. Hornbake (16, p. 11) writes:

It was in reaction to this manual training holdover that the "laboratory of industries" came into being with William E. Warner in the vanguard. The laboratory of industries expressed the same new departure origins as the general shop. But, from the outset, the laboratory of industries was presented not only as a multiple activity arrangement in the sense of representing different industries, but also as a plan for permitting a wide range of learning opportunities in an atmosphere of technological orientation.

Regardless of the shop arrangement used, the trend in literature at least, is toward emphasizing knowledge and understanding rather than skill in industrial-arts classes.

Industrial Arts in California

The fact that California has four state-supported institutions training teachers for the special secondary teaching credential in industrial arts indicates that
industrial-arts enjoys a well-established place in the curricula of California schools.

In the "Guide for Industrial Arts Education in California" (9, pp. 4-7) a total industrial-arts program is suggested. This guide was prepared by leaders in industrial education in California. The program suggested is outlined as follows:

Kindergarten Through the Sixth Grade

Industrial arts experiences should be integrated with the social studies program. If the instruction is to be effective, elementary school teachers should have training in the industrial arts processes appropriate to this level, and elementary schools should have facilities and equipment needed to carry on the activities which are recommended.

Grades Seven, Eight, and Nine

Level I. An exploratory program of two to four semesters that provides industrial arts experiences in a variety of industrial arts subject fields under qualified instructors is suggested. This program may be carried on in a general shop with a number of industrial arts subject areas or by rotating students through a number of unit shops.

Level II. Basic courses, one or two semesters in length, provide an opportunity for a student to take further work in a single industrial arts subject field. These basic courses are usually carried on in unit shops. In small communities these experiences can be provided by assigning learners to a definite industrial arts subject field area with appropriate experiences within the general shop. For schools too small to provide any shop or shop instructor, a mobile shop serving a number of schools may be established. After two semesters in
a particular subject field, a student should be encouraged to enroll in some other basic industrial arts course rather than to take additional work in the same area.

Grades Ten, Eleven, and Twelve

Level II. Basic courses similar to those provided in grades seven, eight, and nine are offered for those students who did not receive these experiences, or who can profit from experiences in industrial arts subject fields other than those selected in grades seven, eight, and nine.

Level III. Intermediate courses, one or two semesters in length, provide further experiences in a single industrial arts subject field. These courses are offered to those who have completed the Level II course in the same field.

Level IV. Advanced courses, one or two semesters in length, are provided for students who have completed Level III courses and wish to specialize still further in a particular industrial arts subject field.

In a large school system with a number of shops, experiences described under the various levels in this section are usually offered in a unit shop for each industrial arts subject field. In the small school they may be provided through a general shop or limited general shop by assigning a student to a specific area with which he is concerned.

The above program indicates the trend toward keeping beginning industrial-arts work general and exploratory in nature. The more advanced work, on the other hand, tends to be more specific and pre-vocational in nature. This is in keeping with good practice throughout the country.
Rural Education

An examination of problems and trends common to other rural communities would be helpful at this point. The importance of rural education is pointed out by McCann (18, p. 363) in the following manner:

The importance of education is recognized as essential to the development of each child, and to the welfare of society. It is, therefore, necessary that instruction of children in rural areas be as effective as the best schools anywhere.

An indication of the type of education needed in rural communities is shown in the report of the Western and Rocky Mountain States Conference of Agricultural and Educational Leaders. (1, p. 22) One of the statements made in the report is here quoted:

The school must recognize that a large percent of farm youth will, and must, migrate to urban centers for employment opportunities. Its program must be broad enough to meet the needs of those who will go to the cities, as well as those who will remain on the farm, so that all will be able to use such abilities as they have to the best possible advantages.

The two fundamental problems in rural education are: schools too small for modern education and school districts too small for adequate financing of modern education. To some extent an increase in the size of rural schools will improve their financial status. More pupils can be handled by one teacher; however, the resulting
rise in the cost of transportation in some cases offsets any financial gain made by more economical teacher-pupil ratios. When schools are consolidated or unified new buildings are usually needed and adequate bonding capacity is not always available. These are some of the factors contributing to present agitation for more federal aid to education.

The one-room school with the best of teachers, which it seldom has, cannot provide modern education. Howard A. Dawson, Director of Rural Service, National Educational Association (19, p. 39) claims:

There is ample evidence that the minimum size of an efficient and economical school administrative unit is about 45 teachers and at least 1200 pupils, and that wherever geographic and fundamental sociological conditions permit, the unit should certainly be much larger than indicated by these figures.

In summing up the rural school situation Dawson (19, pp. 29-30) says:

It can be categorically stated that many of the best and most of the poorest schools in the nation are found in our rural areas. When, however, rural schools as a class are compared with urban schools as a class it is an inescapable conclusion that millions of rural children are seriously handicapped in the educational opportunities available to them.

Altho the rural children of school age constitute more than half of such children in the nation, they have only 38 percent of the available funds for the support of schools.
To a large extent the rural schools are small institutions, over a third of the pupils being enrolled in schools having only one or two teachers.

These small schools present three problems that have not been met to a large extent: (1) they result in excessively high per pupil costs; (2) they usually offer very limited and restricted instructional opportunities; (3) the teachers usually are not adequately trained to deal with the complicated problems of teaching in small schools.

The most significant aspects of inequalities of educational opportunities cannot be described by mere statistical data. The best of our school systems have modern school buildings, well planned and equipped. In these schools are teachers well educated for the important work they have to do, working with the aid of the best instructional equipment, apparatus material, and library facilities. On the other hand there are several million children attending school in mere shacks, using a few wornout, dirty text-books, taught by teachers who have not so much as completed a high-school education, and often no more than the eighth grade, without the aid of modern instructional materials or the assistance of competent and sympathetic supervision. Practically all such schools are in rural areas of low economic resources.

The problems of rural education have prompted a number of conferences in recent years. Probably the most notable of these was the "White House Conference on Rural Education" in 1945. This conference produced a "Charter of Education for Rural Children": (19, pp. 14-15)

I. Every rural child has the right to a satisfactory, modern elementary education. This
education should be such as to guarantee the child an opportunity to develop and maintain a healthy body and a balanced personality, to acquire the skills needed as tools of learning, to get a good start in understanding and appreciating the natural and social world, to participate happily and helpfully in home and community life, to work and play with others, and to enjoy and use music, art, literature, and handicrafts.

II. Every rural child has the right to a satisfactory, modern secondary education. This education should assure the youth continued progress in his general physical, social, civic, and cultural development begun in the elementary school, and provide initial training for farming or other occupations and an open door to college and the professions.

III. Every rural child has the right to an educational program that bridges the gap between home and school, and between school and adult life. This program requires, on the one hand, cooperation with parents for the home education of children too young for school and for the joint educational guidance by home and school of all other children; and, on the other hand, the cooperative development of cultural and vocational adult education suited to the needs and desires of the people of the community.

IV. Every rural child has the right thru his school to health services, educational and vocational guidance, library facilities, recreational activities, and, where needed, school lunches and pupil transportation facilities at public expense. Such special services, because they require the employment of specially qualified personnel, can be supplied most easily thru enlarged units of school administration and the cooperation of several small schools.

V. Every rural child has the right to teachers, supervisors, and administrators who know
rural life and who are educated to deal effectively with the problems peculiar to rural schools. Persons so educated should hold state certificates that set forth their special qualifications, should be paid adequate salaries, and should be given by law and fair practices security in their positions as a reward for good and faithful services. The accomplishment of these objectives is the responsibility of local leadership, state departments of education, the teacher education institutions, and national leaders in rural education.

VI. Every rural child has the right to educational service and guidance during the entire year and full-time attendance in a school that is open for not less than nine months in each year for at least twelve years. The educational development of children during vacation time is also responsibility of the community school. In many communities the period of schooling has already become fourteen years and should become such in all communities as rapidly as possible.

VII. Every rural child has the right to attend school in a satisfactory, modern building. The building should be attractive, clean, sanitary, safe, conducive to good health, equipped with materials and apparatus essential to the best teaching, planned as a community center, and surrounded by ample space for playgrounds, gardens, landscaping, and beautification.

VIII. Every rural child has the right thru the school to participate in community life and culture. For effective service the school plant must be planned and recognized as a center of community activity; the closest possible interrelationships should be maintained between the school and other community agencies; and children and youth should be recognized as active participants in community affairs.

IX. Every rural child has the right to a local school system sufficiently strong to provide
all the services required for a modern education. Obtaining such a school system depends upon organizing amply large units of school administration. Such units do not necessarily result in large schools. Large schools can provide broad educational opportunities more economically, but with special efforts small schools can well serve rural children and communities.

X. Every rural child has the right to have the tax resources of his community, state and nation used to guarantee him an American standard of educational opportunity. This right must include equality of opportunity for minority and low economy groups. Since many rural youth become urban producers and consumers, it is necessary for the development of the democratic way of life that the wealth and productivity of the entire nation should aid in the support of the right of every child to a good education.

THESE ARE THE RIGHTS OF THE RURAL CHILD BECAUSE THEY ARE THE RIGHTS OF EVERY CHILD REGARDLESS OF RACE, OR COLOR, OR SITUATION, WHEREVER HE MAY LIVE UNDER THE FLAG OF THE UNITED STATES OF AMERICA.
Rural Elementary School Industrial Arts

Industrial-arts programs are very common in junior high schools, but not so common in grades seven and eight in elementary schools. The amount of literature covering industrial arts for grades seven and eight in the elementary school is small. Some of the more recent references to the subject are cited in chronological order below:

In 1935 Hammon and Standish (15, p. 49) wrote:

This article deals with the question of the general shop for the rural school of eight grades, or with the small rural high school which cannot maintain unit shops or special teachers. There are thousands of these schools scattered throughout the state, especially the southern states, where the 8-4 plan is still the principal school organization.

The pupils of these schools should have the advantage of the industrial-arts program in order to make their educational experiences complete, because without this phase of education the school is failing to meet the need of the student.

So far, little has been done to adjust or organize industrial work for the small rural school. There are a few cases where attempts have been made, but for the most part, it has been a unit of woodwork or of drawing and these have been taught in such a way that there is no correlation with other school subjects or with occupational information.

One of the earliest mentions of anything resembling a mobile shop was in a United States Office of
Education bulletin in 1937: (25, p. 117)

The Portable General Shop. - This is a type of organization employed by the itinerant shop teacher, especially in rural communities. Basic equipment, such as benches, and common supplies and materials, are maintained in each of the school shops, while the major portion of the tools and other necessary equipment is mounted on racks and panels or fitted into tool kits and other suitable and convenient devices for transporting them to the various schools. This method is financially economical and guarantees a maximum of use.

In 1936 an itinerant teacher industrial-arts program was started in a rural Ohio community. This general shop program was described in 1938 in the Industrial Education Magazine by Clinton Van Deusen. (30, p. 126) Of the teachers he said:

They provide their own transportation. The industrial-arts teachers, each of whom now teaches in no more than two schools, travel about ten thousand miles a year.

It is interesting to note that no attempt was made to establish a complete mobile shop. Only a few hand tools were carried.

Delmar W. Olson (23, pp. 126-31) described the Clinton County, Ohio industrial-arts program for seven rural schools. In the seventh and eighth grades there were five areas of work: woods, metals, ceramics, textiles, and delineating arts. In this case shops of some sort were evidently available:
A physical laboratory in keeping with this spread of subject matter is indeed elaborate as compared to the traditional woodworking shop. The cost of equipment on the basis of work stations and the number of pupils served is, however, no more than that entailed in furnishing of a woodworking shop. The laboratories in this county program involved an average expenditure of $1,500 for physical facilities which permitted a fairly wide selection of equipment.

In 1945 Dale Easter wrote an article for the "American Vocational Association Journal" (12, p. 17) describing the itinerant shop in Kern County, California. Easter has probably done as much as anyone to publicize the mobile shop program. He wrote another article in 1946 for "School Management" (13, p. 430). In 1949 he wrote a masters thesis at the University of Southern California entitled "A Guide For Mobile General Shop in Kern County Schools" (10). A revision of this thesis is being used as a teachers' manual in Kern County (11, pp. 114). The "first" mobile shop is described in the handbook as follows:

Early in the spring of 1944 a Dodge truck, with high paneled sides, bounced into a school yard for the first time in the history of Industrial Arts. Soon the truck was surrounded by curious children. The place was Mountain View School in Kern County, California. The Driver was Ray Messinger, Supervisor of Industrial Arts and Agriculture. The panels of the truck were lowered on folding legs to reveal a wealth of machines and hand tools. Soon the boys were busy constructing practical, interesting projects planned to correlate with their
particular school programs. This new service proved to be so popular that the following year an instructor was employed to spend his full time with the mobile shop program.

The Kern County program will be discussed in more detail in Chapter III.

Ferdinand Liotta described the San Diego mobile shop program in the "National Education Association Journal" in 1948 (17, pp. 510-511). In an article in the "Industrial Arts and Vocational Education Magazine", (28, p. 263) John Satterstrom wrote about the Santa Clara County, California program. He pointed out the long range purpose of the mobile shop:

There is reason to believe that many schools will eliminate themselves from the group requiring the services of the mobile shop by acquiring adequate facilities of their own. By thus eliminating itself, the mobile unit will serve its highest purpose in the minds of its creators.

Both of these mobile shop programs will be described in detail later in the study.

The "Guide for Industrial Arts Education in California" published in 1949 (9, p. 5) devoted a section to the mobile shop and suggested its use in rural areas.

Evidence that the mobile shop might be generally accepted throughout the country is indicated by its mention in educational textbooks. Butterworth and Dawson mentioned the mobile shop in "The Modern Rural School"
published in 1952. (8, p. 494)

Every community needs a program of industrial arts. If the school is of sufficient size one or more school shops should be provided. In the very small communities perhaps conditions might be such that mobile units, serving several schools, could be used. This plan appears to be meeting with success in San Diego County, California.
Summary of Literature

Industrial arts is an integral part of general education. The trend is toward multiple-activity shops for beginning courses and unit shops for advanced work. The emphasis, particularly in beginning courses, is on knowledge and understanding of industry rather than on skills and vocational level efficiency.

The "Guide for Industrial Education in California" (9, pp. 4-7) suggests a total program from kindergarten through grade twelve, and from simple construction integrated with social studies to intensive unit shop courses stressing pre-vocational training.

Much has been written about rural educational problems. The two main problems are poor financial support and administrative units that are too small. The rural child needs an education equivalent in quality, although somewhat different in content, to the urban child. The children that leave the rural areas every year should be prepared for life in the cities.

The need for rural elementary school industrial arts is being met in some communities by the itinerant teacher and the mobile shop. The purpose of the mobile shop program is to introduce industrial arts and to encourage each school to set up a shop of its own. The most
successful mobile shop program is one that is no longer needed.
CHAPTER III
THE STUDY

As pointed out in Chapter I of this study, there is no industrial-arts program in Calaveras County below the ninth grade. The literature cited in Chapter II indicates the desirability of such a program.

Preliminary Investigation

In order to gain an over-all view of the elementary school situation in Calaveras County the County Superintendent, Mr. Charles Schwoerer, was asked to supply the following information:

1. The number of elementary schools in the county.
2. The number of teachers in each school.
3. The assessed valuation of each district.
4. A. D. A. in each school.

The information sent by Mr. Schwoerer is shown below in table form.
# TABLE II

Elementary School Districts of Calaveras County in 1950

<table>
<thead>
<tr>
<th>District</th>
<th>Number of Teachers</th>
<th>A.D.A.</th>
<th>Assessed Valuation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Esmeralda</td>
<td>1</td>
<td>6</td>
<td>51,380</td>
</tr>
<tr>
<td>Mosquito Gulch</td>
<td>1</td>
<td>25</td>
<td>101,845</td>
</tr>
<tr>
<td>Camanche</td>
<td>1</td>
<td>17</td>
<td>108,940</td>
</tr>
<tr>
<td>Campo Seco</td>
<td>1</td>
<td>12</td>
<td>118,090</td>
</tr>
<tr>
<td>Burson</td>
<td>1</td>
<td>15</td>
<td>142,950</td>
</tr>
<tr>
<td>Sheepranch</td>
<td>1</td>
<td>22</td>
<td>174,635</td>
</tr>
<tr>
<td>Douglas Flat</td>
<td>1</td>
<td>17</td>
<td>192,850</td>
</tr>
<tr>
<td>Evergreen</td>
<td>1</td>
<td>10</td>
<td>202,525</td>
</tr>
<tr>
<td>Paloma</td>
<td>1</td>
<td>14</td>
<td>236,855</td>
</tr>
<tr>
<td>Wallace Jr.</td>
<td>1</td>
<td>19</td>
<td>244,505</td>
</tr>
<tr>
<td>Vallecito</td>
<td>2</td>
<td>43</td>
<td>291,230</td>
</tr>
<tr>
<td>Eldorado Union</td>
<td>2</td>
<td>31</td>
<td>357,200</td>
</tr>
<tr>
<td>Milton</td>
<td>1</td>
<td>4</td>
<td>446,435</td>
</tr>
<tr>
<td>Jenny Lind</td>
<td>1</td>
<td>10</td>
<td>488,910</td>
</tr>
<tr>
<td>Mokelumne</td>
<td>2</td>
<td>60</td>
<td>555,970</td>
</tr>
<tr>
<td>Railroad Flat</td>
<td>2</td>
<td>60</td>
<td>641,960</td>
</tr>
<tr>
<td>Murphys</td>
<td>2</td>
<td>67</td>
<td>671,020</td>
</tr>
<tr>
<td>Altaville</td>
<td>3</td>
<td>85</td>
<td>878,495</td>
</tr>
<tr>
<td>Valley Springs</td>
<td>3</td>
<td>77</td>
<td>986,885</td>
</tr>
<tr>
<td>Mother Lode Union</td>
<td>7</td>
<td>180</td>
<td>1,392,095</td>
</tr>
<tr>
<td>Copperopolis</td>
<td>2</td>
<td>46</td>
<td>1,653,385</td>
</tr>
<tr>
<td>West Point Union</td>
<td>9</td>
<td>229</td>
<td>1,870,250</td>
</tr>
<tr>
<td>San Andreas</td>
<td>7</td>
<td>239</td>
<td>2,689,525</td>
</tr>
<tr>
<td>Avery</td>
<td>4</td>
<td>92</td>
<td>2,980,635</td>
</tr>
</tbody>
</table>

Total 57  Total 1380  Total $17,479,000

Mean 2.3  Mean 57.5  Mean 728,000

It will be noted that twelve, or one-half, of the schools were one-teacher schools in 1950. In 1949 and again in 1951 the people of Calaveras County voted against unifying their schools on a county-wide basis. The average teacher load for all the elementary schools in the county
was slightly over twenty-four students. However, the average teacher load for the twelve one-teacher schools was fourteen. The A. D. A. ranged from 4 to 239.

Geographical Areas Included in the Study

Mr. O. D. Davis, who at the inception of this study was Consultant in Industrial Arts Education for the State of California, supplied a list of four counties having industrial-arts programs in their rural elementary schools. These four counties are referred to in Chapter I and are shown on Map 1. They are Imperial, Kern, San Diego, and Santa Clara. Kings County, also shown on Map 1, started a mobile shop program in industrial-arts in 1948 but, according to Gerald L. Jacobus, Kings County Superintendent of Schools, the program was discontinued because of inadequate financing of the small elementary schools. A comparison of these counties is shown in Table III.
### TABLE III

A Comparison of Populations, Areas in Square Miles, Lowest Elevations, and Highest Elevations of the Counties Included in the Study

<table>
<thead>
<tr>
<th>County</th>
<th>Population 1950</th>
<th>Area in Square Miles</th>
<th>Elevation in feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calaveras</td>
<td>9,902</td>
<td>1,028</td>
<td>300 6,070</td>
</tr>
<tr>
<td>Imperial</td>
<td>62,975</td>
<td>4,284</td>
<td>-219 2,700</td>
</tr>
<tr>
<td>Kern</td>
<td>228,309</td>
<td>8,170</td>
<td>291 8,826</td>
</tr>
<tr>
<td>Kings</td>
<td>46,768</td>
<td>1,395</td>
<td>206 3,473</td>
</tr>
<tr>
<td>San Diego</td>
<td>556,808</td>
<td>4,258</td>
<td>0 6,515</td>
</tr>
<tr>
<td>Santa Clara</td>
<td>209,547</td>
<td>1,305</td>
<td>0 4,372</td>
</tr>
</tbody>
</table>

Calaveras County is the smallest county in both population and area. San Diego, Kern, and Calaveras Counties all contain considerable mountainous areas.

#### The Interviews

During the preliminary investigation, a search was made for recent references in periodical literature to rural elementary school industrial-arts programs including grades seven and eight. This step was necessary in order to conduct the interviews more intelligently.

Following the examination of literature, interviews were arranged with the heads of the four county
industrial arts programs mentioned by Mr. Davis. The men interviewed and their titles are shown by counties in Table IV.

**TABLE IV**

Names and Titles of Those Interviewed

<table>
<thead>
<tr>
<th>County</th>
<th>Person Interviewed</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Imperial</td>
<td>Mr. V. P. Peterson</td>
<td>Coordinator of Industrial Arts</td>
</tr>
<tr>
<td>Kern</td>
<td>Mr. J. Ray Messinger</td>
<td>Coordinating Consultant</td>
</tr>
<tr>
<td>San Diego</td>
<td>Mr. Ferdinand Liotto</td>
<td>Coordinator of Industrial Arts and Vocational Education</td>
</tr>
<tr>
<td>Santa Clara</td>
<td>Mr. Howard Warren</td>
<td>Supervisor of Industrial Arts</td>
</tr>
</tbody>
</table>

The Imperial, Kern, and San Diego interviews were arranged in one trip to Southern California during March, 1951. The Santa Clara interview took place in May of the same year. All data gathered were for the school year 1950-51. An interview form was used in order to keep the information gathered as uniform as possible. The forms were adhered to as much as possible; however, as the interviews progressed it became necessary to alter certain items. It was because of this flexibility that the personal interview was used instead of
the more common mailed questionnaire.

**Programs in Operation**

The length of time the programs had been in operation is shown in Table V.

<table>
<thead>
<tr>
<th>County</th>
<th>Length of Service in Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Imperial</td>
<td>4</td>
</tr>
<tr>
<td>Kern</td>
<td>6</td>
</tr>
<tr>
<td>Kings</td>
<td>1 (1948)</td>
</tr>
<tr>
<td>San Diego</td>
<td>4</td>
</tr>
<tr>
<td>Santa Clara</td>
<td>6 (interrupted between 1942 and 1949)</td>
</tr>
</tbody>
</table>

It is interesting to note that all of these programs were developed within the last few years.

In all five counties the mobile shop was used. The vehicles used in Imperial and San Diego were converted Navy trucks. Kern County used custom made van type trucks. The Santa Clara County shop was in a converted city bus. Santa Clara and Kern Counties formerly used trailers pulled by the teachers' cars. Pictures of some of these
mobile shops will be found in Appendix B. The itinerary of the mobile shops was worked out in two different ways. San Diego mobile shop teachers lived in the vicinities of the schools they served. In the other three counties all mobile shops started from the county seat. The number and types of vehicles used are shown in Table VI.

TABLE VI

Number and Type of Vehicles Used by Counties

<table>
<thead>
<tr>
<th>County</th>
<th>Number</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Imperial</td>
<td>1</td>
<td>Navy ordinance</td>
</tr>
<tr>
<td>Kern</td>
<td>2</td>
<td>Custom made van truck</td>
</tr>
<tr>
<td>San Diego</td>
<td>4</td>
<td>Navy Amphibian truck</td>
</tr>
<tr>
<td>Santa Clara</td>
<td>2</td>
<td>Converted bus Teacher's car</td>
</tr>
</tbody>
</table>

Santa Clara County was the only county not using a truck of some sort. Unlike the trucks, the bus did not contain student work benches. Santa Clara County also supplied an itinerant teacher, driving his own car, for the benefit of those schools with shops but no teacher of their own.

Duties of Mobile Shop Teachers

The duties of the mobile shop teachers were
similar to, but somewhat more complex than, those of most industrial-arts teachers. For example, the mobile shop teacher was sometimes called upon to handle classes with a very wide span of ages. In such cases he integrated the lower grade work with that of the elementary school teachers, and at the same time, presented the more conventional type of industrial-arts course for seventh and eighth grade pupils.

The mobile shop teacher was also charged with the responsibility of maintaining the equipment on the mobile shop, the equipment in the school shops, and some of the preventive maintenance on the vehicle itself.

The usual shop supply problems were complicated by the fact that some supplies were carried on the vehicle and some were left at the schools.

The time spent traveling to any one elementary school depended on the distance, type of terrain, conditions of roads, and the nature of the itinerary. The maximum time spent traveling to any one school is shown on Table VII.
TABLE VII

Maximum Time Spent Traveling to Elementary Schools
By Each of Three Counties

<table>
<thead>
<tr>
<th>County</th>
<th>District</th>
<th>Time in Minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Imperial</td>
<td>Ft. Yuma</td>
<td>180</td>
</tr>
<tr>
<td>Kern</td>
<td>Muroc</td>
<td>120</td>
</tr>
<tr>
<td>Santa Clara</td>
<td>Loma Prieta</td>
<td>60</td>
</tr>
</tbody>
</table>

The above distances represented extremes; nevertheless, presented a serious problem in scheduling classes.

San Diego County established four routes. The teacher lived in the vicinity of his route. The routes are listed according to average miles traveled per day in Table VIII.

TABLE VIII

Average Distance Traveled Per Day
by San Diego Mobile Shops

<table>
<thead>
<tr>
<th>Route</th>
<th>Miles Per Day</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>45</td>
</tr>
<tr>
<td>B</td>
<td>24</td>
</tr>
<tr>
<td>C</td>
<td>60</td>
</tr>
<tr>
<td>D</td>
<td>50 (one over night stop)</td>
</tr>
</tbody>
</table>
Mobile Shops and Equipment

Each mobile shop was equipped with benches, lockers, machines, and outlets for outside electrical sources of 110 volt A. C.

The equipment carried in the mobile shop varied somewhat according to the type of program presented and the space available. Table IX shows what equipment was carried by each county in their mobile shop.
<table>
<thead>
<tr>
<th>Equipment</th>
<th>Imperial</th>
<th>Kern</th>
<th>San Diego</th>
<th>Santa Clara</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Band Saw</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Circular Saw</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>*</td>
<td>4</td>
</tr>
<tr>
<td>Disk Sander</td>
<td>x</td>
<td></td>
<td>x</td>
<td>*</td>
<td>3</td>
</tr>
<tr>
<td>Jig Saw</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Jointer</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Portable Sander</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Router-shaper</td>
<td>x</td>
<td></td>
<td></td>
<td>x</td>
<td>2</td>
</tr>
<tr>
<td>Multipurpose Unit</td>
<td></td>
<td></td>
<td></td>
<td>*</td>
<td>1</td>
</tr>
<tr>
<td>Wood Lathe</td>
<td></td>
<td></td>
<td></td>
<td>*</td>
<td>2</td>
</tr>
<tr>
<td>Wood Vises</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Bar Folder</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td>2</td>
</tr>
<tr>
<td>Buffer</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>4</td>
</tr>
<tr>
<td>Forming Rolls</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Gas Welder</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Machinist Vises</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Sheet Metal Brake</td>
<td>x</td>
<td></td>
<td></td>
<td>x</td>
<td>3</td>
</tr>
<tr>
<td>Kiln</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Drill Press</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Grinder</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>4</td>
</tr>
<tr>
<td>Portable Drill</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>4</td>
</tr>
<tr>
<td>Work Benches</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

*Shop Smith
Only four pieces of equipment were carried by all four mobile shops. These were circular saw, jig saw, buffer, and grinder. Santa Clara County uses two multipurpose units. This particular type of multipurpose unit, the Shop Smith, will operate as a circular saw, drill press, wood lathe, and as a disc sander. No benches or hand tools were carried in the Santa Clara County mobile shop; each elementary school supplied its own. In Imperial County all hand tools were carried in the mobile shop. Most of the hand tools were transported in the mobile shops in Kern and San Diego Counties. In each case, the arrangement of the equipment had been very carefully planned to make maximum use of the available space.

**Elementary School Shops**

Wherever possible, the elementary schools provided a room or building for the shopwork. When no building or room was available, the classes were held around the mobile shop. Imperial County is the only place where no provisions for rainy weather were made. This is easily understood; the yearly average rainfall is 2.61 inches.

Supplies were stored in the school rooms, in the mobile shops, or at county offices depending upon the
system used. In two counties the mobile shops were stored at the teachers' homes; and in the other two counties they were stored at the county headquarters.

Administration and Finance

In no case, did a mobile shop serve all the elementary schools in the county. All four counties used the same general method of selling the county mobile shop service to the individual districts. The elementary school district contracted for the service from the county. The money paid by the school district was generally used for the teacher's salary. The county provided the mobile shop and, in some cases, some of the supplies. A sample of the contract entered into by the county and the school district can be seen in Appendix B.

The cost of industrial-arts service to the elementary school districts varied, as shown in Table X.

**TABLE X**

Cost of Industrial-Arts Service to Each Elementary School for the School Year 1950-51

<table>
<thead>
<tr>
<th>County</th>
<th>Cost Per Year</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Imperial</td>
<td>$200</td>
<td>1/2 day every two weeks</td>
</tr>
<tr>
<td>Kern</td>
<td>430</td>
<td>1/2 day every week</td>
</tr>
<tr>
<td>San Diego</td>
<td>550</td>
<td>1/2 day every week</td>
</tr>
<tr>
<td>Santa Clara</td>
<td>380</td>
<td>1/2 day every week</td>
</tr>
</tbody>
</table>
Santa Clara County charged less per week for one-half day service than the others; however, not all schools used the mobile shop. Some schools provided their own equipment; in which cases, an itinerant teacher was supplied by the county. The charge was the same whether the school used the mobile shop or the itinerant teacher only.

The initial cost of the mobile shops was difficult to determine or compare because of the variety of equipment used and the various sources of vehicles. Perhaps the most expensive units were the custom built vans used in Kern County. The original units cost $6,350.00 fully equipped. The original outlay, no doubt, varied a good deal according to how the units were equipped.

In all four counties, the County School Service Fund is used to maintain the service. This fund, paid by the state, is used by the county superintendent to set up special educational services. A letter from the California State Department of Education and another from the Superintendent of Schools, Calaveras County contain more detailed information about the County School Service Fund. These letters can be found in Appendix A.

Schedule of Classes

One-half day each week was the most common unit of time for scheduling classes. The Imperial County
mobile shop called on all but three schools once every two weeks for one-half day each. The remaining three were served every week. Two of the larger schools in Imperial County separated grades seven and eight, allowing one and one-half hours for each grade. Kern County also used one and one-half hour classes in the larger schools.

There were no girls in the Santa Clara County classes. In Kern County the smaller schools only, included girls. Imperial and San Diego Counties included girls in all classes.

In all four counties industrial arts was a required course, at some level, in the schools using the county service. Imperial and San Diego required the course in grades seven and eight. Kern County required the course in grades six, seven, and eight. San Diego policy varied; the most common method was to require industrial-arts work in all grades. In such cases, the lower grade work was integrated with the social-studies program. In all four counties, most of the classes included students from several grades.

Curriculum

In all four counties, the work was presented as a series of unit shops. Although the organization commonly recommended for elementary and junior high
schools is the general shop; it can be readily understood that the mobile shop places limitations on the variety of materials and tools used at any one time. The areas taught by each county are shown in tabular form in Table XI.

TABLE XI

Areas Taught in Mobile Shop Programs

<table>
<thead>
<tr>
<th>Area</th>
<th>Imperial</th>
<th>Kern</th>
<th>San Diego</th>
<th>Santa Clara</th>
</tr>
</thead>
<tbody>
<tr>
<td>Art Metal</td>
<td>x</td>
<td>x</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Sheet Metal</td>
<td>x</td>
<td>x</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Bench Metal</td>
<td></td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Forging</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Welding</td>
<td></td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Woodwork, Bench</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Woodwork, Machine</td>
<td>x</td>
<td>x</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Carving</td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Plastics</td>
<td>x</td>
<td>x</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Leather</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ceramics</td>
<td></td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Mechanical Drawing</td>
<td>x</td>
<td>x</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Electricity</td>
<td></td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Concrete</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Home Mechanics</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lapidary</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
</tbody>
</table>
The difference in programs was quite noticeable. San Diego, with a total of thirteen, represented the most areas taught. The emphasis on integrating industrial arts with social studies in the lower grades probably accounted for this. The work in Imperial County was more intensive and of high quality in the areas covered. The machine woodworking, in most cases, was very limited in nature and restricted to the older students. In Kern, San Diego, and Santa Clara Counties, much of the disadvantage of the unit shop was overcome by the incidental introduction of other areas.

A Comparison of Conditions in Calaveras County With Those Found in the Four Counties Conducting Mobile Shop Programs

Following the interviews, the data gathered were studied and compared. The A. D. A. figures for all Calaveras elementary schools were compared with the A. D. A. figures of those elementary schools receiving mobile shop service. In order to show a more accurate picture, the twelve largest Calaveras elementary schools were shown in a separate column. This was done because none of the counties studied served more than 50 percent of the total number of elementary schools in the county.
TABLE XII

A Comparison of A. D. A. for 1950-51 of School Districts Served by County Industrial-Arts Programs with Calaveras Elementary School Districts and with the Twelve Largest Calaveras Elementary School Districts

<table>
<thead>
<tr>
<th>Calaveras</th>
<th>Calaveras 12 largest</th>
<th>Imperial</th>
<th>Kern</th>
<th>San Diego</th>
<th>Santa Clara</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>31</td>
<td>49</td>
<td>10</td>
<td>17</td>
<td>12</td>
</tr>
<tr>
<td>6</td>
<td>43</td>
<td>55</td>
<td>28</td>
<td>17</td>
<td>45</td>
</tr>
<tr>
<td>10</td>
<td>46</td>
<td>62</td>
<td>44</td>
<td>25</td>
<td>71</td>
</tr>
<tr>
<td>10</td>
<td>60</td>
<td>74</td>
<td>57</td>
<td>37</td>
<td>77</td>
</tr>
<tr>
<td>12</td>
<td>77</td>
<td>77</td>
<td>62</td>
<td>39</td>
<td>147</td>
</tr>
<tr>
<td>14</td>
<td>67</td>
<td>124</td>
<td>63</td>
<td>40</td>
<td>189</td>
</tr>
<tr>
<td>15</td>
<td>77</td>
<td>144</td>
<td>74</td>
<td>67</td>
<td>214</td>
</tr>
<tr>
<td>17</td>
<td>85</td>
<td>149</td>
<td>96</td>
<td>83</td>
<td>215</td>
</tr>
<tr>
<td>17</td>
<td>92</td>
<td>185</td>
<td>98</td>
<td>98</td>
<td>228</td>
</tr>
<tr>
<td>19</td>
<td>180</td>
<td>221</td>
<td>101</td>
<td>98</td>
<td>254</td>
</tr>
<tr>
<td>22</td>
<td>229</td>
<td>237</td>
<td>122</td>
<td>122</td>
<td>388</td>
</tr>
<tr>
<td>25</td>
<td>239</td>
<td></td>
<td>124</td>
<td>124</td>
<td>403</td>
</tr>
<tr>
<td>31</td>
<td></td>
<td></td>
<td>136</td>
<td>149</td>
<td>534</td>
</tr>
<tr>
<td>43</td>
<td></td>
<td></td>
<td>160</td>
<td>163</td>
<td>679</td>
</tr>
<tr>
<td>46</td>
<td></td>
<td></td>
<td>200</td>
<td>282</td>
<td></td>
</tr>
<tr>
<td>60</td>
<td></td>
<td></td>
<td>358</td>
<td>360</td>
<td></td>
</tr>
<tr>
<td>67</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>77</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>85</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>92</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>180</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>229</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>239</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The mean for all schools in Calaveras was only fifty-eight, which was far below the others; but after dropping the smallest twelve schools, all of which were one-teacher schools, the mean was 101, or the same as the
mean for all the schools served by the San Diego mobile shop. Santa Clara was high with an A. D. A. mean of 230.

The mean assessed valuation of the elementary school districts were dealt with in much the same manner. The figures used were: all Calaveras districts, richest one-half of the Calaveras districts, and all the districts served by each county.

TABLE XIII

A Comparison of the Mean Assessed Valuation of Elementary School Districts Using County Industrial-Arts Service with the Mean Assessed Valuations of all Calaveras Elementary School Districts and with the Richest One-Half of the Calaveras Elementary School Districts

<table>
<thead>
<tr>
<th>County</th>
<th>Mean Assessed Valuation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kern</td>
<td>$6,792,000</td>
</tr>
<tr>
<td>Santa Clara</td>
<td>1,796,000</td>
</tr>
<tr>
<td>San Diego</td>
<td>1,665,000</td>
</tr>
<tr>
<td>Calaveras (richest one-half)</td>
<td>1,271,000</td>
</tr>
<tr>
<td>Imperial</td>
<td>1,130,000</td>
</tr>
<tr>
<td>Calaveras (all)</td>
<td>728,000</td>
</tr>
</tbody>
</table>

Again, it is interesting to note that when the smallest twelve districts were dropped the mean was within the range of the other counties. However, even then, the mean was far below Kern County, the highest, with
$6,792,000, and only slightly above Imperial County with $1,130,000. The twelve Calaveras districts with the highest assessed valuation contained only two one-teacher schools; one of those has been closed since these data were computed.

The Jury of Experts

In order that this study would be something more than a report of methods used, it was felt that a jury of experts in the field should be called upon to answer certain questions with reference to the findings thus far. The jury was made up of nine men. Four were the heads of Pacific Coast college industrial-arts departments, four were the heads of the industrial-arts programs investigated, and one was the Superintendent of Calaveras County. Following is a list of the jury members:

Mr. George B. Cox, Head of Industrial Education, Oregon State College

Mr. Marion A. Grosse, Chairman, Department of Industrial Arts, Fresno State College

Dr. E. E. Siro, Head of Industrial Arts Department, Chico State College

Dr. Heber A. Sotzin, Head of Industrial Arts Department, San Jose State College

Mr. D. Dale Easter, Coordinating Consultant, Kern County Schools

Mr. V. P. Petersen, Industrial Arts Coordinator, County of Imperial
Mr. Burton C. Tiffany, Curriculum Coordinator, County of San Diego

Mr. Howard Warren, Supervisor of Industrial-Arts Education, Santa Clara County

Mr. Charles Schwoerer, Superintendent of Schools, Calaveras County

The following items were sent to each jury member: a letter of transmittal, a summary of findings thus far, and a short questionnaire. The jury was asked to answer seven questions with reference to the initial findings of the study. An attempt was made, in formulating the questions, to take advantage of the superior experience and judgment of the experts.

Opinions of Jury of Experts as Shown by Replies to Questionnaire

Question 1: Do you feel that an industrial-arts program is generally desirable in elementary schools of the 8-4 plan?

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
<th>No Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
Question 2: Do you think an elementary school industrial-arts program is desirable in Calaveras County?

TABLE XV

The Desirability of an Industrial-Arts Program in Calaveras County

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
<th>No Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

The replies to the first two questions agree with current literature in the fields of industrial arts and rural education.

Question 3: Do you think that such a program is economically possible in Calaveras County?

TABLE XVI

Economic Possibility of an Elementary Industrial-Arts Program in Calaveras County

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
<th>No Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

The juror who replied no to this question was the Superintendent of Calaveras County Schools. His reasons were: "... I do not think it is possible under the present district organization, particularly from a
financial standpoint." One of those who did not directly answer this question wrote: "My guess would be that with the increased state aid and if the people in your county desire such a program it could be financed."

Question 4: Do you think a mobile shop should be used, if such a program were introduced?

TABLE XVII

Desirability of Using a Mobile Shop in Calaveras County

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
<th>No Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

The juror answering no to question three also answered no to question four. One of those answering yes added the following note: "Because of your limited resources I am wondering if it would not be wiser to start with a small pick-up truck or jeep or station wagon on which you could carry the necessary tools."

Question 5: Check grade levels that should be covered by such a program.
TABLE XVIII

Grade Levels for an Elementary School Industrial-Arts Program in Calaveras County as Checked by Jurors

<table>
<thead>
<tr>
<th>Grade Level</th>
<th>Number of Checks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eight</td>
<td>9</td>
</tr>
<tr>
<td>Seven</td>
<td>9</td>
</tr>
<tr>
<td>Six</td>
<td>8</td>
</tr>
<tr>
<td>Five</td>
<td>3</td>
</tr>
<tr>
<td>Four</td>
<td>3</td>
</tr>
<tr>
<td>Three</td>
<td>3</td>
</tr>
<tr>
<td>Two</td>
<td>3</td>
</tr>
<tr>
<td>One</td>
<td>3</td>
</tr>
<tr>
<td>Kindergarten</td>
<td>3</td>
</tr>
</tbody>
</table>

Three jurors checked all grades. One of the jurors added: "I think it is highly desirable . . . that the industrial arts be provided all grades if your instructor is capable of handling all age levels and providing activities appropriate for the various grades."

Another juror made the following notation after the grades from kindergarten through four: "Craft experiences in these levels plus activities based around the social science enriches the program and prepares the children for continued work in industrial arts."

One juror suggested that the program start with
grades six, seven, and eight and be extended downward.

There were no notes or reservations on grades seven and eight; all nine jurors checked them.

Question 6: Should the classes be coeducational?

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
<th>No Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

There were several comments and qualifications about this question. One juror wrote, "All children come in contact daily with our industrial products, appliances, and equipment of all types."

Another juror qualified his answer by adding: "This would depend upon the school and students. Home economics would come under this item as well."

A third juror added, "if the classes are not too large."

In the matter of coeducation industrial-arts classes, practice appears to lag behind theory.
Question 7a. Should industrial arts be a required course?

TABLE XX
Desirability of Making Industrial-Arts a Required Course in Elementary Schools of Calaveras County

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
<th>No Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

No answer was given by one juror; however, he commented as follows: "In a well-organized and challenging program of industrial arts, requirement of the courses would not be necessary; there would be a waiting line."

One of those checking no wrote, "I do not feel that industrial arts should be a required course, but I do feel that we have a real obligation to get in as much of this type of activity in line with our other responsibilities as we are able . . . ."

Question 7b. If industrial arts should be a required course, check grade levels.
TABLE XXI

Grade Levels at Which Industrial-Arts Should be Required in an Elementary School Program

<table>
<thead>
<tr>
<th>Grade Level</th>
<th>Number of Checks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eight</td>
<td>5</td>
</tr>
<tr>
<td>Seven</td>
<td>6</td>
</tr>
<tr>
<td>Six</td>
<td>2</td>
</tr>
<tr>
<td>Others</td>
<td>0</td>
</tr>
</tbody>
</table>

The six jurors answering this question checked the grades as follows: one checked seven only, two checked six, seven, and eight, and three checked eight and seven. Grade seven was high with six. No jurors checked grades below six.
CHAPTER IV

CONCLUSIONS AND RECOMMENDATIONS

Our industrial environment in the United States has had considerable influence on general education. Industrial arts has come to be widely accepted as an integral part of general education. Well-planned industrial-arts programs are designed to acquaint young people with industrial life, its products, methods, and social problems. The consumption of industrial products is, by no means, restricted to urban areas.

A study of industries is important to rural children. Every year many high school graduates leave rural areas to find employment in industry. The mechanization of farming and the introduction of industrial products into rural homes have made an understanding of industrial products important to those who remain on the farm.

It has been the purpose of this study to investigate the possibilities of introducing industrial arts into the elementary schools of Calaveras County. To accomplish this purpose three steps were followed: (1) the general content to be used in the proposed program was determined, (2) the best means of providing the program was determined, (3) recommendations were formulated on the basis
of the findings.

The first step, determining the general content, was accomplished by examining current literature, courses of study, and state bulletins and by visiting school districts with programs now in operation. The second step, the determination of the best means of providing the program, was somewhat more difficult. The literature available was not as abundant as might be desired. Information available from literature was supplemented by that obtained from interviews with leaders in rural elementary industrial arts. The findings were presented to a jury of experts who contributed further to the solution of the problem by answering a questionnaire. The third, and last, step was the formulation of recommendations based on the findings recorded in Chapter II and Chapter III. These recommendations are presented in this chapter.

Conclusions

The following conclusions are based on the findings recorded in Chapter II and Chapter III:

1. Industrial arts has an important contribution to make to rural school children.

2. Industrial arts has an established place in elementary schools of the 8-4 plan.
3. A program of industrial-arts is desirable in the elementary schools of Calaveras County.

4. Although a course in industrial-arts for each child is desirable, it may not be necessary to require the course.

5. The mobile shop has made an important contribution to industrial-arts in rural communities with limited facilities.

6. Industrial-arts on the elementary school level should be exploratory in nature. The content below grade seven is usually integrated with classroom work in social studies.

7. Industrial-arts in elementary schools should be taught as a general shop.

8. Courses of industrial-arts on the elementary school level should be coeducational.

9. Reorganization of the schools of Calaveras County into larger administrative areas would facilitate the initiation of an industrial-arts program in the elementary schools.

10. The financial status of the present elementary school districts in Calaveras County would have to be considered seriously before starting an industrial-arts program.

11. A complete mobile shop as used in the four counties studied may not be needed in order to start an industrial-arts program in the Calaveras County elementary schools.

12. The original equipment could be simple and restricted to hand tools.

13. A small vehicle, such as a station wagon or light truck, could be used to transport a teacher and a minimum amount of tools and materials.

14. All some of the larger elementary schools may need is encouragement from the county office and the services of an itinerant teacher.
15. The salary of the itinerant or mobile shop teacher could be paid by those elementary schools subscribing to the industrial-arts service from the county.

Recommendations

In order to expedite the introduction of industrial arts into the elementary schools of Calaveras County, the following recommendations are made:

1. A report of the findings of this study should be presented to the Superintendent of Schools, Calaveras County.

2. A similar report should be presented to the Calaveras County Teacher's Association.

3. A summary of the findings of this study should be presented to the trustees of the elementary schools; especially the larger ones.

4. A detailed study of the financial status of each elementary school in Calaveras County should be made.

5. The elementary school teachers of Calaveras County should include in their summer school work courses in industrial arts for elementary schools.

6. Arrangements should be made for a workshop in elementary school industrial arts to be held in Calaveras County. Perhaps, this could be arranged as part of the teacher's institute.

7. An industrial-arts program for the elementary schools of Calaveras County should be organized as soon as possible.

8. The program should be exploratory in nature and should use the general shop type of organization.
9. In most cases, a program should be set up to serve the seventh and eighth grades first, and extended downward as the program develops.

10. It is recommended that a light vehicle, such as a station wagon or a pick-up truck, equipped with hand tools be used to start with.

11. The State Consultant of Industrial Arts for California should be asked for assistance in setting up the program.

12. One of the local state colleges should be called upon to help in the organization of a program. Both San Jose State and Fresno State have offered to assist.

13. Civic and service clubs might be contacted. It is possible that they might contribute work benches and tools enough to get started. Local clubs might want to contribute to their local school as a matter of pride.
BIBLIOGRAPHY


Mr. O. D. Davis
State Consultant of Industrial Arts
State Department of Education
Sacramento, California

July 3, 1950

Dear Sir:

In conjunction with my work for the Master's Degree at Oregon State College, I am working on a thesis entitled "A Proposed Industrial Arts Program for the Elementary Schools of Calaveras County, California". Mr. Horace Schorling, who is advising me, suggests that I write to you for help.

It would be helpful to me to have the following information:

1. Names of rural counties similar to Calaveras having Industrial Arts programs in the elementary schools, particularly in grades 7 & 8 in the 8-1 plan.
2. Names of supervisors or superintendents whom I could get in touch with.
3. Any similar studies that you are familiar with that might be helpful. I have already written Mr. Dale Easter of Kern County.
4. Any other material or data that in your opinion might make this study a useful piece of work.

Any information you can give will be greatly appreciated.

Thank you.

Sincerely yours,

Ralph R. Wheeler

RRW/BMW
Mr. Ralph R. Wheeler  
Industrial Arts Teacher  
925 North 31st Street  
Corvallis, Oregon

Dear Mr. Wheeler:

In reply to your letter of July 3rd, I have had very little contact with the industrial arts program in the elementary fields. However, there are three counties I know of that are doing considerable with reference to that program.

You might write to the following:

Mr. J. P. Satterstrom, Supervisor  
Industrial Arts  
Santa Clara County  
2320 Moorpark Avenue  
San Jose, California

Mr. Ferdinand V. Liotta  
Coordinator of Vocational Ed.  
San Diego County Schools  
4005 Rosecrans Street  
San Diego, California

Mr. V. P. Petersen  
Industrial Arts Coordinator  
County of Imperial  
El Centro, California

Mr. Satterstrom has done considerable in this field in Santa Clara County and I believe Mr. Petersen is attempting to establish mobile shop units in Imperial County.

While these are not mountainous areas such as you have in Calaveras County, they are the only ones that I know of that are attempting to do very much in industrial arts at the elementary level. There may be others that have not come to my attention.
Mr. Ralph R. Wheeler

July 7, 1950

I hope that this information will be of use to you in your study.

Sincerely yours,

/s/ O. D. Davis

O. D. Davis, Consultant in Industrial Arts Education

ODD:hb
Mr. Charles Schwoerer  
Superintendent of Schools, Calaveras County  
San Andreas, California

Dear Mr. Schwoerer:

In conjunction with my graduate study at Oregon State College I have chosen a Thesis subject which, I hope, will be of some value to us in Calaveras County. The title of the Thesis will be "A Proposed Industrial Arts Program for the Elementary Schools of Calaveras County, California". There is one study that I know of, done at U.S.C., covering a similar situation in Kern County. Perhaps you have heard of the mobile shops used there.

In order for me to get a start this Summer I will need the following information:

1. The number of elementary schools in the county.  
2. The number of teachers in each school.  
3. The assessed valuation of each district.  
4. A.D.A. in each school.

It will be a great help to me if this information is available.

Thank you.

Yours sincerely,

Ralph R. Wheeler

RRW/BMW
Ralph R. Wheeler
Industrial Arts Teacher
Calaveras Union High School
San Andreas, California
SUMMER ADDRESS:
925 No. 31st
Corvallis, Oregon

July 3, 1950

Mr. D. Dale Easter
Kern County Schools
Bakersfield, California

Dear Sir:

As a Thesis problem at Oregon State College I am working on "A Proposed Industrial Arts Program for the Elementary Schools of Calaveras County, California". It is my understanding that you worked on a similar problem at the University of Southern California. I am very much interested in reading your work. If you would be so kind as to send me the title and date of the Master's Project I would send to the University for it on their library loan.

Through the kindness of Henry Hall of your county schools I had the privilege of examining a copy of your "Handbook for Industrial Arts Teachers". Is this book available; and if so, what is the cost?

Thank you very much for your cooperation in these matters.

Yours sincerely,

Ralph R. Wheeler

RRW/BMW
Mr. Ralph R. Wheeler  
Industrial Arts Teacher  
Calaveras Union High School  
San Andreas, California

Dear Mr. Wheeler:

I am sorry about the delay in answering your letter of July 3, it was on my desk when I returned from vacation.

In answer to your request for a copy of our "Handbook for Industrial Arts Teaching," I am sending you a complimentary copy. They are not generally for sale, however, I hope it will be of some value to you in your study. The handbook is a revision of my thesis at U.S.C. The title of my thesis is, "A Guide for Mobile General Shop in Kern County Schools" dated June 1949.

I would be very much interested in reading your study when you have completed it. Would you let me know when it is available?

Good luck in all of your graduate work.

Sincerely,

JESSE D. STOCKTON  
COUNTY SUPERINTENDENT OF SCHOOLS

/s/ D. Dale Easter  
D. Dale Easter  
Coordinating Consultant

DDE:dja
Jesse D. Stockton
Superintendent of Schools

TEACHING AIDS LIBRARY
1514 "K" Street
Bakersfield, California

August 22, 1950

Mr. Ralph R. Wheeler
Calaveras Union High School
San Andreas, California

Dear Mr. Wheeler:

Under separate cover, we are sending you one copy of "A Handbook for Industrial Arts Teachers".

There is no charge for this book and is being sent with the compliments of the Superintendent of Kern County Schools.

Sincerely yours,

JESSE D. STOCKTON, SUPT.
KERN COUNTY SCHOOLS

/s/ Elizabeth Thatcher
M. M.

Elizabeth Thatcher, Librarian
Teaching Aids Library
CALAVERAS UNION HIGH SCHOOL
SAN ANDREAS, CALIFORNIA

March 7, 1951

Ralph R. Wheeler
Industrial Arts Teacher

Mr. Ferdinand V. Liotta
Coordinator of Vocational Ed.
San Diego County Schools
4005 Rosecrans Street
San Diego, California

Dear Sir:

I am investigating the desirability of establishing an Industrial Arts program in grades seven and eight in the elementary schools of Calaveras County. I understand that you have such a program now. If an interview can be arranged I would like to discuss this program with you.

This investigation is being conducted with the help and consent of Mr. Charles Schwoerer, County Superintendent of Schools, Calaveras County, Mr. O. D. Davis, State Consultant in Industrial Arts, Doctor Horace O. Schorling, Associate Professor, Department of Industrial Arts, Fresno State College, and the Industrial Arts Department at Oregon State College.

I will be in Southern California during the week March 19 to 24. If you can spare me an hour sometime during that week would you let me know by the enclosed card?

I will be interested in methods of administration, finance, equipment, curriculum, and also statistics such as the number of teachers, the A.D.A., the assessed valuation, and the distance from County offices of the schools served by your program.

Thank you.

Yours sincerely,

Ralph R. Wheeler,
Industrial Arts Teacher
Calaveras Union High School
San Andreas, California

RRW/BMW
Encl. 1
Interview with __________________ Place ______ Date ______

Name ______ Title ______

I. General Statistics

<table>
<thead>
<tr>
<th>District</th>
<th>Number of Teachers</th>
<th>A.D.A. Assessed</th>
<th>Time From Valuation</th>
<th>Headquarters</th>
</tr>
</thead>
</table>
Administration

A. General
   1. Who is in charge of the program?
   2. Do all schools in the county participate?
      a. How many do?
      b. How were they chosen?
   3. How long has the program been in operation?

B. Schedule and class size
   1. How long are the classes?
   2. How often are the classes held?
   3. Are there girls in the classes?
   4. Are there special classes for girls?
   5. Is the course required? What grades?
   6. Are there mixed grades in the classes?
   7. How many schools have industrial arts classes each week?

C. Finance
   1. Who pays the teacher's salary?
   2. Who pays for supplies?

Source of Funds

D. Personnel
   1. How many teachers are employed in the program?
   2. Who buys the supplies?
   3. Who maintains the vehicles?
   4. Who hires the teachers?
E. Plant Facilities

1. Where are supplies kept?
2. Where are the vehicles kept?
3. What rooms or shops are provided by the individual schools?
4. What provisions are made for rainy weather?

II. Curriculum

A. How is the course presented; unit shop ______ comprehensive general shop ______ or limited general shop?

B. What areas are taught?

1. Art metal ______
2. Sheet metal ______
3. Bench metal ______
4. Forging ______
5. Welding ______
6. Machine shop ______
7. Woodwork, bench ______
8. Woodwork, machine ______
9. Carving ______
10. Plastics ______
11. Leather ______
12. Ceramics ______
13. Mechanical drawing ______
14. Graphic arts ______
15. Electricity ______

III. Equipment and Supplies

A. Mobile

1. What motor vehicles are used if any?
2. Are supplies stored in the vehicles?

B. What equipment is used
Mobile

At Schools

circular saw
band saw
jig saw
jointer
disk sander
belt sander
lathe
drill press
brake
bar folder
forming rolls
forge
welder, A. C.
gas welding
metal lathe
grinder
buffer
vises
benches
others

C. How many of the hand tools are transported?
   a. all  b. none  c. few  d. most

D. Who maintains the equipment?
October 20, 1951

Ralph R. Wheeler
Industrial Arts Teacher

Dr. Emmitt J. Bohne,
Administration Assistant and
Director of Business Research,
Santa Clara County Schools,
2320 Moorpark Avenue,
San Jose, California.

Dear Sir:

I am investigating the desirability of establishing an Industrial Arts program in grades seven and eight in the elementary schools of Calaveras County. I recently talked with Mr. Howard Warren of your County who gave me much of the information I needed. At that time Mr. Warren suggested that I write you for further information about the financing of your mobile shop program. If you would answer the following questions it would help me a great deal.

What is the basic rate the elementary schools pay for mobile shop service?

What is the basic rate if the mobile shop is not used but the County provides a teacher?

What other funds are used to finance the program? Please be specific where possible, e.g. State: Special service fund.

State:

County:

Elementary School District:

Other sources:
Assessed valuation of the following elementary school districts for 1951:

Air Point
Alviso
Berryessa Union
Burbank
Cambrian
Encinal
Evergreen
Machado
Milpitas
Morgan Hill-Burnett
Oak Grove
Orchard
Rucker
Loma Prieta Jt. Union

Also, can you give me the individual A.D.A. figures for the Morgan Hill Elementary School and the Burnett Elementary School for 1950-51?

Thank you very much for your cooperation.

Sincerely yours,

RRW/BMW
Enc. 1
Dear Mr. Wheeler:

I shall attempt to answer the questions you asked in your letter of October 20th.

First, What is the basic rate the elementary schools pay for mobile shop service? The district in contracting for the services of the traveling teacher automatically receives the service of the Mobile Shop Unit. There is no charge to the individual school or district except for the teacher. In this county, the teacher receives an annual salary of $3800. They provide their own mileage. The district pays the prorated portion of the teacher's salary depending upon the amount of instructional time contracted. One-fourth day costs $190.00 per year; one-half day costs $380.00 per year.

Second, What is the basic rate if the mobile shop is not used but the county provides a teacher? The rate is the same for instruction whether or not the Mobile Shop is used.

Third, What other funds are used to finance the program? The entire Mobile Shop program is financed through the County School Service Fund. The total budget for the year 1951-52 is as follows:

Other Operating Expense $ 1,784.65
Equipment $ 398.00

Assessed Valuations for the elementary districts you indicated are as follows for 1951:
Mr. Ralph R. Wheeler  

-2-  

October 31, 1951

Air Point  842,500  Alviso  481,720
Berryessa  2,821,280  Luther Burbank  1,922,390
Cambrian  3,583,500  Encinal  2,279,610
Evergreen  180,880  Machado  531,250
Milpitas  1,794,460  M. H.-Burnett  4,954,830
Oak Grove  2,930,140  Orchard  3,139,950
Rucker  1,449,450  Loma Prieta  983,110

Average Daily Attendance figures for the Morgan Hill - Burnett District 1950-51 was 679.

If we can be of further service to you please call upon us.

Sincerely yours,

/s/ E. J. Bohne

E. J. BOHNE
Administrative Assistant
Santa Clara County Schools

EJB:br

cc:  John Satterstrom, Supervisor
     Industrial Arts, Santa Clara County
October 20, 1951

Ralph R. Wheeler
Industrial Arts Teacher

Mr. Gerald L. Jacobus
Superintendent of Kings County Schools
Hanford, California

Dear Sir:

I am investigating the desirability of establishing an Industrial Arts program in grades seven and eight in the elementary schools of Calaveras County. I understand that you initiated such a program in Kings County recently. If an interview can be arranged I would like to discuss this program with you.

This investigation is being conducted with the help and consent of Mr. Charles Schwoerer, County Superintendent of Schools, Calaveras County, Mr. O. D. Davis, State Consultant in Industrial Arts, Doctor Horace O. Schorling, Associate Professor, Department of Industrial Arts, Fresno State College, and the Industrial Arts Department at Oregon State College.

I can be in Hanford any week end for the rest of this year. If you can spare me an hour or so some week end would you let me know by the enclosed card?

I will be interested in methods of administration, finance, equipment, curriculum, and also statistics such as the number of teachers, the A.D.A., the assessed valuation, and the distance from County offices of the schools served by your program.

Thank you.

Yours sincerely,

Ralph R. Wheeler,
Industrial Arts Teacher
Calaveras Union High School
San Andreas, California

RRW/BMW
Encl. 1
Hanford, California
October 30, 1951

Mr. Ralph R. Wheeler
P.O. Box 286
San Andreas, California

Dear Mr. Wheeler:

We started a mobile shop three years ago, but because of excessive costs of the district subscribing to the service, we discontinued it. If we had more adequate financing for our small elementary schools, I am sure it would be a welcome service.

Sincerely,

GERALD L. JACOBUS
KINGS COUNTY SUPT. OF SCHOOLS
In the light of the above findings please answer the following questions:

1. Do you feel that an industrial-arts program is generally desirable in elementary schools of the 8-4 plan?  
   Yes____ No____

2. Do you think an elementary school industrial-arts program is desirable in Calaveras County?  
   Yes____ No____

3. Do you think that such a program is economically possible in Calaveras County?  
   Yes____ No____

4. Do you think a mobile shop should be used if such a program were introduced?  
   Yes____ No____

5. Check grade levels that should be covered by such a program.  
   8____ 7____ 6____ 5____ 4____ 3____ 2____ 1____ K____

6. Should the classes be coeducational?  
   Yes____ No____

7. a. Should industrial arts be a required course?  
   Yes____ No____
b. If so, check grade levels.

8
7
6
others

Your suggestions and comments: (Use the back if necessary)
Mr. Ralph R. Wheeler  
P.O. Box 286  
San Andreas, California  

May 6, 1952  

Mr. V. P. Petersen  
Industrial Arts Coordinator  
County of Imperial  
El Centro, California  

Dear Mr. Petersen:

I realize that time is slipping by at the end of the year rush is on; but, I am sure you would like to help another county establish a more comprehensive Industrial Arts program. If you would take a few minutes to fill out the questionnaire enclosed with the resume of my findings (sent to you on April 21, 1952) you would be helping Calaveras County education very much. I am sure you are aware of the difficulties of introducing a new program; we will need all the expert opinions and advice possible.

Thank you for your attention to this matter.

Sincerely yours,

RRW/BMW
COUNTY OF SAN DIEGO  
Office of the Superintendent of Schools  
209 Civic Center  
San Diego 1, California

BURTON C. TIFFANY  
Curriculum Coordinator

May 29, 1952

Mr. Ralph R. Wheeler  
P.O. Box 286  
San Andreas, California

Dear Mr. Wheeler:

Your letter to Mr. Liotta has been referred to me for reply inasmuch as Mr. Liotta is in South America on a two-year leave of absence working in the Point Four Program. While I do not have the intensive background in this area which Mr. Liotta has, I shall attempt to answer your questions to the best of my knowledge and, in most cases I believe, in the way Mr. Liotta would answer them.

It seems to me that an industrial arts program is generally desirable in elementary schools and I see no reason why it should not be desirable in Calaveras County. As to whether or not such a program is economically possible in Calaveras County, I am unable to answer. My guess would be that with the increased State aid and if the people in your County desire such a program it could be financed. Because of your limited resources I am wondering if it would not be wiser to start with a small pick-up truck or jeep or station wagon on which you could carry the necessary tools. In the elementary program I think it is highly desirable that the classes be coeducational and that the industrial arts be provided all grades if your instructor is capable of handling all age levels and providing activities appropriate for the various grades. I do not feel that
Mr. Ralph R. Wheeler

May 29, 1952

industrial arts should be a required course, but I do feel that we have a real obligation to get in as much of this type of activity in line with our other responsibilities as we are able to do. I hope these answers are of some value to you.

Cordially yours,

/s/ Burton C. Tiffany

Burton C. Tiffany
Curriculum Coordinator
Mr. Ralph R. Wheeler  
925 North 31st Street  
Corvallis, Oregon

Dear Ralph:

The County School Service Fund was set up by the state in 1948. It is paid entirely by the state out of the state school money. Of the $120 per a.d.a. that the state must put into the school fund, $3.00 per a.d.a. is set aside for the County School Service Fund. This is then apportioned to each county in accordance with a budget submitted by the County Superintendent of Schools, based upon need in his county and approved by the State Superintendent of Public Instruction. After the budget is approved the state apportions to the county 1/10 of the total amount each month. It is used to pay supervision personnel in the county offices and to provide services to the districts which they need and could not provide themselves.

I hope this short explanation will help.

Sincerely yours,

/s/ Chas. F. Schwoerer

Chas. F. Schwoerer  
Superintendent of Schools  
Calaveras County
Mr. Ralph R. Wheeler
925 No. 31st Street
Corvallis, Oregon

Dear Mr. Wheeler:

I received your letter of June 30 in which you make inquiry about the use of the County School Service Fund for the purchase of a mobile industrial arts shop program for the elementary schools of Calaveras County. From the questions you ask, I presume you are more interested in the function and purpose of the County School Service Fund than in the specific question.

The County School Service Fund was instituted in 1947 and is a fund made available to the county superintendents of schools on a budget basis approved by the Superintendent of Public Instruction. It consists of $3.00 per A.D.A. for elementary, high school, and junior college.

At the present time we are allocating the fund to the counties on a formula which is a weighted teacher basis. The budget for small counties deviates from the formula due to their size. The fund is generally used to provide curricular and special services to the small school districts, which services would not be made possible except through the cooperative efforts of the county superintendents of schools. Of course, any new service can be authorized in a county provided there is money and it meets the requirements of the law.

Now back to your original question. These mobile shop units have been placed in operation in various counties, but there is serious question as to
Mr. Ralph R. Wheeler  

July 15, 1952

their legality. They certainly can be used for supervision and coordination purposes, but County School Service Funds cannot be used for direct instruction.

Very truly yours,

/s/ Frank M. Wright

Frank M. Wright
Associate Superintendent
of Public Instruction

FMW:LS
AGREEMENT FOR SPECIAL TEACHING SERVICES

The Governing Board of the ________ Elementary School District of Santa Clara County, hereinafter called the Board, and the Superintendent of Schools of the County of Santa Clara, hereinafter called the Superintendent, agree as follows:

1. The Superintendent agrees to furnish special teaching services in the field of ________, if possible, for the school year ______, for ______ quarter days each school week.

2. The Board will pay the salary of the instructor named by the Superintendent at an annual rate of $__________.

GOVERNING BOARD OF THE:

ELEMENTARY SCHOOL DISTRICT

_________________________________ Clerk

_________________________________ Member

Date___________________

_________________________________ Member

Date___________________

Superintendent of Schools,
Santa Clara County
MOBILE UNIT WORKSHOP GOES TO RURAL SCHOOLS

Provide complete power workshop for the smallest rural schools? It has seemed difficult if not impossible, though it has long been the dream of many industrial arts educators. A new mobile shop unit, developed by the Santa Clara County School Department, provides a solution to this problem which can be adopted by many school districts.

The four smallest schools served by this unit have 13, 16, 29, and 41 students, respectively. Yet for at least a portion of one day each week, students at these schools are enabled to use a power workshop which provides one 4 in. jointer, four jig saws, one two-stone grinder, and two Shopsmith multipurpose units. Each of the Shopsmith units can be converted by the instructor, as required, into an 8 in. circular saw, 33 in. wood lathe, 12 in. disk sander, vertical drill press, jig saw, drum sander, or shaper.

All of this equipment fits neatly into a retired commercial type bus which was reclaimed for a modest price from a local dealer. The fact that so much equipment can be fitted into such a limited space is largely a result of the compactness of the Shopsmith units, each of which adds greatly to the flexibility of the shop but occupies only 18 x 60 in. of floor space. Eight students can work in the bus at one time, and there is ample space around each work station.

This mobile unit does not provide hand woodworking facilities. Its purpose is to supplement the small hand woodworking shops with which most of the schools in Santa Clara County are equipped, and bring them for one day a week at least, some of the advantages of "big city" school shops. Through demonstration and training, pupils are taught to respect the value and use of each type of power equipment represented. They are then permitted to use the power tools when their projects require such equipment, but they do a large part of their work with
hand tools in their own school shops. In this way the value of experiences with power tools is spread over a maximum number of students. Students in these rural schools regard an opportunity to use the power equipment as an opportunity well worth striving for—something akin to a meeting with Joe DiMaggio or a trip to the World Series.

A full time industrial arts instructor operates the unit. He is paid by the school districts served, although he is under the supervision of the Santa Clara County School Department. He is a graduate student in industrial arts from San Jose State College.

In addition to producing an almost immeasurable increase in student interest in industrial arts by giving them an opportunity to work with this equipment, the new unit has helped instructors by providing power tools for preparation of stock. The quality of the work produced in the small rural shops has improved markedly. This is probably as much due to the increased enthusiasm of students and instructors as it is to the additional equipment provided.

By no means the smallest benefit derived from the unit has been the assistance it has provided in advancing the cause of industrial arts in Santa Clara County. School administrators, once discouraged by lack of equipment and generally lacking in enthusiasm about the addition of industrial arts courses in their schools, are now competing with each other to obtain more frequent visits from the mobile unit.
MOBILE SHOPS HELP EQUALIZE EDUCATIONAL OPPORTUNITIES FOR RURAL SCHOOLS

Mobile shops bring new learning opportunities to children in San Diego County's smaller schools by providing modern industrial arts facilities and specialized instruction usually found only in urban school districts. How rural school children begin to build and create with the materials of man's world is a significant phase of county-level educational services in San Diego County.

Every school day four mobile shops cover a 500-mile itinerary, traveling through mesa-land, orchards and groves, skirting beaches and lakeshores to reach schools in every section of the County. At each of these schools children and teachers look forward to the weekly arrival of the mobile shop for its half- or full-day visit.

These modern shop facilities are former Navy ordnance trucks acquired by the San Diego County Department of Education with the help of the California State Department of Education. They have been adapted for teaching purposes and re-equipped with diversified light power and hand tools, clamps, vises, and other necessary equipment and materials. Each unit is conducted by a teacher-consultant whose specialized knowledge and skill in industrial arts is utilized by teachers to meet individual pupil and class needs.

Depending on the size and type of school, shop day finds pupils, teacher, and consultant meeting in a special classroom, in the rearranged regular classroom, or under the shelter of the extended wings of the truck. Average class size is twenty although up to thirty-five children may participate, with each child receiving personal attention from teacher and consultant.

A wide variety of manipulative activities is possible: children in mobile shop classes create in leather, metal, wood, plastics, ceramics, and paper. Seeing raw materials grow into fashioned articles as a result of their own efforts strongly motivates children to carry through individual and shared projects.

Typical of fourth and fifth grade activities is the constructing of model adobe houses, utensils, costumes, and figures to dramatize study of early California and Mexican life and customs. Constructing things related to current units of work helps children to learn.

For pupils in the upper elementary grades who are ready for exploratory activities, the mobile shops program brings an opportunity to acquire ability in using tools and in successfully completing self-chosen projects. Such experiences help boys and girls make occupational and recreational choices, and develop consumer intelligence.
The program is conducted so as to promote education for democracy in living terms. Teachers find that mobile shop activities provide an excellent means for developing cooperative behavior and habits of personal responsibility in boys and girls. So that the group may complete class projects successfully, each pupil contributes his share of the construction. Caring for tools, understanding and following safe practices in their use, and cleaning up after shop period help children learn to work with others.

Another contribution of the mobile shops is the facilitating of teacher in-service training, an important need in rural areas. The well-equipped mobile shops enable teachers in outlying districts to hold workshop meetings at the hub of their rural locality. Aided by the teacher-consultant, they practice manual skills later to be imparted to their pupils; build teaching devices such as easels, bulletin boards, silent and reading games, and science exhibits; and work out together methods of using constructional activities to enrich pupil learning experiences.

This dynamic program for teaching manipulative skills in rural schools is the result of cooperative planning by the Office of the County Superintendent of Schools and the trustees, administrators, teachers, and parents of the local school districts. Financed jointly by the County Schools Service Fund and participating school districts, mobile shops bring "large-school-district" advantages to rural areas, helping to equalize educational opportunities for the children of San Diego County.

Since inception of the program in September 1947, the number of participating schools and mobile units in operation has doubled. Mobile shops, proving adaptable to a wide variety of situations, have been used for adult education classes, teachers' club workshops, children's out-of-school organizations, and community groups. In conjunction with these activities the industrial arts workshop at the County Schools Service Center offers complete facilities for large groups of teachers to work with the mobile shop teacher-consultants.

A pilot program in San Diego County, mobile shops have aroused interest in other parts of the state and nation. A twelve-minute, sound, color motion picture describing the program was produced in 1948 by Audio-Visual Service of San Diego County Schools. At many educational conferences this film has been shown, the mobile trucks exhibited, and the program explained so that other rural areas might benefit.

Educators agree that all children should have the opportunity to fashion things of beauty and utility through use of minds, eyes, hands, and tools. Such experiences lead to increased possibilities of pupil success in school, enhance meaningful learning, and aid in personal as well as occupational fitness. Mobile shops provide these opportunities as a county-level educational service to the children of San Diego County's rural areas.
Kern County, Exterior

Kern County, Interior

Santa Clara County, Exterior

Santa Clara County, Interior

MOBILE SHOPS