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A description and analysis of the hearing conservation program of the Office of the Stanislaus County, California, Superintendent of Schools

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A DESCRIPTION AND ANALYSIS OF THE HEARING CONSERVATION PROGRAM OF THE OFFICE OF THE STANISLAUS COUNTY, CALIFORNIA, SUPERINTENDENT OF SCHOOLS

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CHAPTER I

INTRODUCTION

I. THE PROBLEM

Statement of the Problem

The primary purpose of this study was to provide a comprehensive description of a school hearing conservation program that might be used by personnel planning other programs, to serve as a guide or for comparison. A secondary purpose of the study was to analyze and evaluate the hearing conservation program of the Office of the Stanislaus County Superintendent of Schools in order to find more efficient ways of administering and conducting the program and otherwise improve its effectiveness.

Importance of the Problem

It appears from a review of the literature that no detailed description of a school hearing conservation program has been written. Related literature is also very scarce. The writer has consulted the Education Index, lists of masters' theses and doctoral dissertations in the field of speech and hearing, and books on audiometry dating from 1938 (before the pure tone audiometer came into extensive use) to the present. Several references to specific

hearing conservation programs were listed; however, a check of the works cited revealed a lack of information relating to methods, procedures, and details in the establishment of a school program. The writings were mainly confined to the reporting of statistical results of hearing surveys.

The writer believes that a comprehensive description of a school hearing conservation program would be very helpful to a person who is responsible for administering or developing this kind of program. Although a program may not be completely adaptable to another area, there are ideas, directions, and perspectives which can be gained by reviewing the activities of others who have been engaged in the same field of work.

The study is also important as a means of evaluating the hearing conservation program of the Office of the Stanislaus County Superintendent of Schools. From the standpoint of finances alone an analysis of the program has significant value. Although the program has been reviewed occasionally, a formal evaluation has never before been made.

II. ORGANIZATION OF THE REMAINDER OF THIS WORK

The remainder of this work begins with a review of the philosophy and administrative organization under which the hearing conservation program of the Office of the Stanislaus County Superintendent of Schools functions. The duties and responsibilities of the audiometrist-hearing consultant, who administers the program, are discussed.

Following this is a description of the physical equipment involved in the program, including the hearing testing equipment and the mobile hearing conservation unit.

The study continues by presenting in detail the methods and procedures of administering hearing surveys and other activities of the audiometrist-hearing consultant.

Another part of the work includes a compilation of data relating to the hearing surveys conducted in the program throughout a typical year, including follow-up information on hearing loss cases identified during the year.

A presentation then follows of a summary of the answers to a questionnaire completed by school nurses and otologists associated

with the program. The study is concluded by a summary and the writer's conclusions and recommendations.

CHAPTER II

PHILOSOPHY OF THE OFFICE OF THE STANISLAUS COUNTY SUPERINTENDENT OF SCHOOLS AND ITS DEPARTMENT OF HEALTH EDUCATION

The County Superintendent's Office

The philosophy of education of the Stanislaus County Superintendent of Schools Office ". . . is one which believes that the schools are maintained primarily for children, that these children are individual boys and girls, entitled to be dealt with as such." [1] The office ". . . insures the American principle of giving freedom of educational opportunity to all youth, . . . to give our children the best training in the world no matter where or how they live . . . so that each individual can fully develop his latent talents." [2]

The Department of Health Education

Philosophy of the Department. The department of health education of the Office of the County Superintendent of Schools

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[1] Teacher's Application Form (Modesto, California: Stanislaus County Schools), p. 1.

[2] Educational Opportunities for All Youth, 16mm sound motion picture (Modesto, California: Stanislaus County Schools).

"recognizes that the primary function of the school is education."[3] The department's philosophy states that "Good health of both the student and school staff in a good environment is essential if the learning process is to be effective, and maintenance of optimum health so that the individual may be able to live a happy useful life as a member of his family and community."[4]

Philosophy of the Hearing Conservation Program. The Stanislaus County Schools Hearing Conservation Program includes in its philosophy that "The ability to hear is basic to normal oral communication, understanding and use of speech. Limitations in a child's auditory perception interfere with his intellectual, social, emotional status and growth.

"Since approximately 75 percent of all regular classroom instruction is given orally, it is imperative that the student be able to hear. Often a child with a hearing loss is considered purposely inattentive, emotionally disturbed, or even mentally retarded. The

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[3]Information and Policies of the Department of Health Education, Physical Education and Recreation, Stanislaus County Schools (Modesto, California: Stanislaus County Schools), p. 1.

[4]Ibid., p. 1.

hard of hearing and the potentially deaf child should be identified as soon as possible and be given the proper medical and educational assistance that will either improve their aural capacity and make the best use of their residual hearing, or in other ways provide for subsequent health, educational, and vocational needs."[5]

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[5]Ibid., p. 15.

CHAPTER III

ORGANIZATION AND ADMINISTRATION OF THE PROGRAM

The County Superintendent of Schools Office

The Stanislaus County Superintendent of Schools Office is a service agency which (1) assists local school districts in providing services which they could not efficiently or economically furnish alone, (2) functions as a part of the county government, and (3) acts locally in the capacity of an intermediate unit for the California State Department of Education.[6]

The office is administered by an elected superintendent and a five-member, elected county board of education. There is a director for each of six departments: business services, elementary education, secondary education, instructional material services, health education, guidance, and special education. (See Figure 1.) The total number of personnel working in the office is seventy. Of these, thirty-eight are certificated by the California State Department of Education. The others work as secretaries, clerks, accountants, librarians, etc.

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[6]School Services at the County Level (Modesto, California: Stanislaus County Schools), foreword.

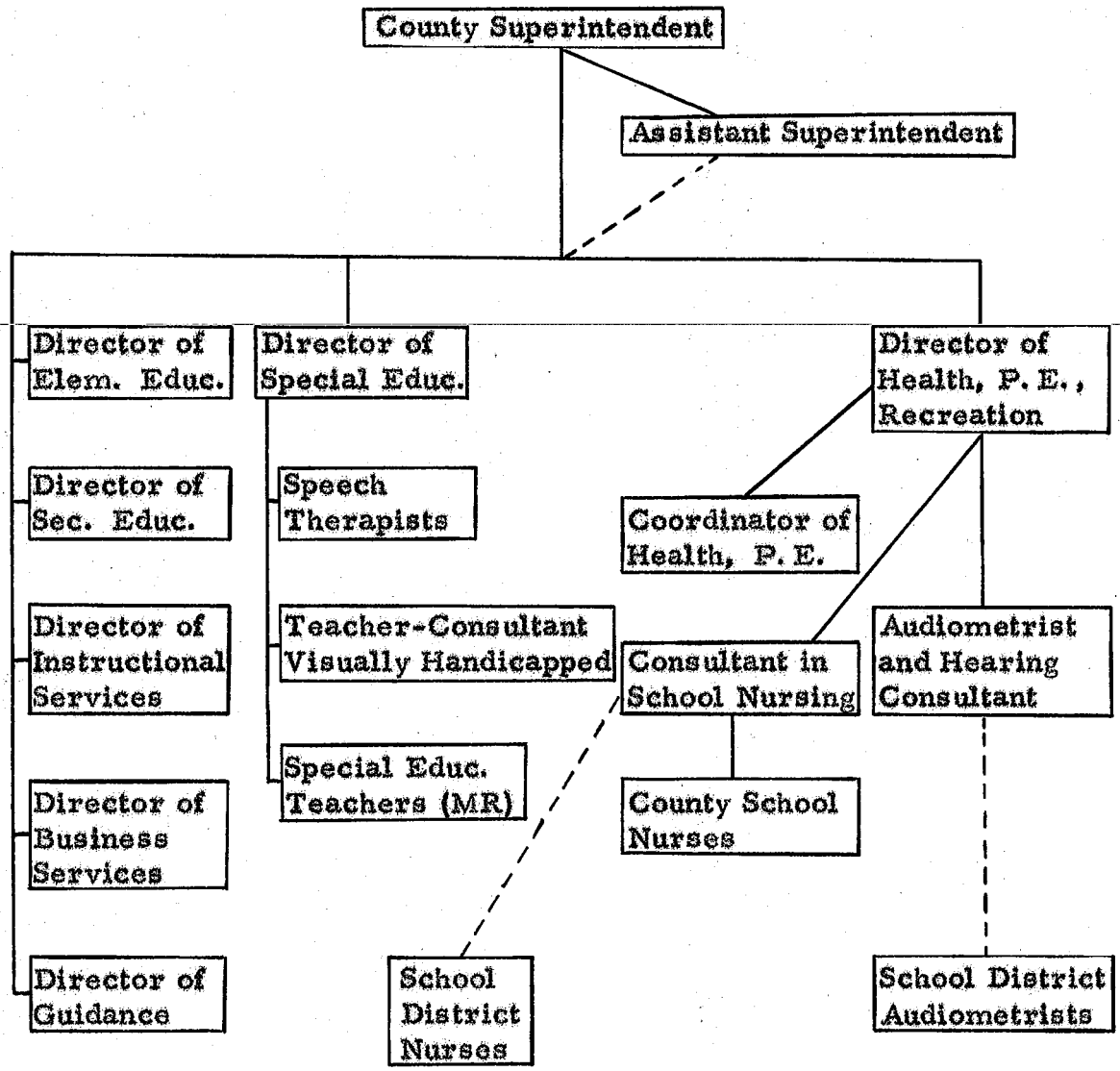

Figure 1. Administrative organization of the Office of the Stanislaus County Superintendent of Schools.

The hearing conservation program is administered by the audiometrist-hearing consultant in the department of health, physical education, and recreation. Other county office personnel who are directly or indirectly involved in the total hearing conservation program are the speech consultants, county school nurses, and those who may be consulted in specific cases, for example, psychologists and elementary consultants (classroom supervisors).

Qualifications and Duties of Audiometrist-Hearing Consultant

Qualifications. The requirements for the position of audiometrist-hearing consultant on the staff of the Stanislaus County Superintendent of Schools include the possession of (1) a basic general elementary or secondary teaching credential, (2) a Certificate of Registration as a School Audiometrist and the Health and Development Credential or the Special Secondary Credential for Teaching Lip Reading to the Hard of Hearing, (3) a supervision credential, and (4) a master's degree or its equivalent.[7]

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[7] Teacher's Contract (Modesto, California: Stanislaus County Schools).

Duties. The duties of the audiometrist-hearing consultant include identifying children who have hearing defects and assisting to provide information and to make recommendations concerning educational and vocational needs. He is responsible for coordinating the hearing testing personnel of districts providing their own audiometry service and is available to assist school personnel and parents in the total adjustment of the child.

This staff member is concerned with the conservation of normal hearing among school children and is further responsible for interpreting the hearing program to the communities in the county.

Specifically, the audiometrist-hearing consultant administers the hearing conservation program. This includes the planning, scheduling, conducting and reporting of school hearing surveys, preparing of an annual budget, assisting at otological clinics, and providing of comprehensive hearing tests for pupils who require them. He is also responsible for the care and management of audiometric equipment and vehicles.

As hearing consultant, he consults with county office and school district personnel to interpret hearing test results, recommend special instructional methods, and to suggest classroom environmental adjustments. Nurses, doctors, psychologists, administrators,

and parents may also call upon him for assistance in special cases. He prepares bulletins and other materials on the education of the hard of hearing child.

He plans and conducts meetings of teachers and other personnel in schools to help them interpret the audiogram and learn the educational needs and limitations of the aurally handicapped students.

The audiometrist-hearing consultant provides technical aid and consulting service to all school districts employing their own hearing personnel. Assistance may be given in the establishment of local school district programs. Meetings are held periodically to coordinate the hearing conservation programs throughout the county.

The audiometrist-hearing consultant acts as a resource person in the education of the hard of hearing child and speaks to community and parent groups. He also provides for newspaper and radio publicity on this subject.

The audiometrist-hearing consultant functions according to his job description in an unrestricted atmosphere in the Stanislaus County Schools Office. He is free to schedule the work as desired, dividing his time into the various phases of the program--testing, consulting, coordinating, and hearing conservation education.

The Work Load. At present, enough time for a complete hearing conservation program is not possible because of other staff assignments. The administration feels that a more thorough program would be very desirable but at this time cannot be justified in light of the total services the office is now offering school districts. Adequate funds are available, however, for equipment to increase the efficiency of the present program.

It is recognized that the program could be improved by additional time being given to educational follow-up, teacher and parent meetings, assistance to classroom teachers in the preparation of hearing conservation instruction to pupils, and public information about the program.

Other Agencies and Individuals

The total Stanislaus County Schools Hearing Conservation Program involves school personnel, government agencies, and other individuals who are not part of the staff of the county superintendent of schools.

One of these is the local school administrator, who is directly concerned with the program as it affects his school. He superintends the work of the school nurse and speech therapist who may be working

in his school. The administrator supervises advance preparations for the hearing survey and is responsible for carrying out recommendations made for children with hearing losses.

The Stanislaus County Health Department is an agency not directly connected with the schools which arranges for medical care for those hearing cases which qualify for the California State Crippled Children's Service or other medical assistance to the needy.

Other individuals include the four otologists practicing in Stanislaus County and the physicians in general practice. They accept pupils for medical diagnosis and treatment and occasionally make educational recommendations. Contact with the Stanislaus County Medical Society is maintained through the physicians and schools Advisory School Health Committee.

Also related to the total hearing conservation program are the Ceres Elementary School District's classes for the deaf and hard of hearing. Children throughout the county who have permanent hearing problems and cannot satisfactorily progress in the regular classroom may be referred to these classes which were originally established with the assistance of the county schools office. Children residing in other school districts in Stanislaus or nearby counties may attend under special arrangement.

The Stanislaus County Schools Hearing Conservation Program also involves parents and parent groups in the follow-up of cases and in the education of the communities.

CHAPTER IV

EQUIPMENT

Equipment for the Stanislaus County Schools Hearing Conservation Program is housed and transported in a nineteen-foot trailer which is used as a mobile hearing testing unit. (See Plate 1 in Appendix A.) The weight of the unit is approximately two tons.

The trailer was purchased for $1,750 from a Los Angeles, California, mobile home manufacturer in 1953 without interior furnishings. The model is designated by the manufacturer as the "Terry Rambler." Cabinets, desks, benches, and other fittings to prepare the trailer for hearing testing were installed in Modesto.

Internal dimensions of the mobile unit are seventeen feet by seven feet with a six-foot ceiling.

When completed, the trailer had one inch of spun glass insulation within the walls and ceiling and under the floor. One-half inch acoustical tile covered the ceiling and walls above the three-feet-high wainscoting on the inside of the trailer. One-quarter inch cork tile was placed on the floor.

The windows were covered on the inside with one-half inch plywood and one-half inch acoustical tile. Two doors, both on the same side, provide access to the inside of the mobile unit.

A 1500 watt electric heater, a three-quarter ton air conditioner, and two ceiling exhaust fans are installed in the trailer.

The heater will warm the unit sufficiently during cold weather, but may require one hour to do so.

The air conditioner provides some relief from the heat of days which are warmer than eighty degrees Fahrenheit. It is too noisy to be in operation during the administration of hearing tests and is, therefore, usable only between testing periods.

The exhaust fans are adequate in removing stale air from the mobile unit. They require about three minutes of operation for a complete change of air within the mobile unit.

Heating and ventilation are usually adequate in the mobile unit. However, if the unit is not parked in shade, it may become uncomfortable on a warm day for testing continuously without intervals of five or ten minutes between tests for cooling the air in the mobile unit.

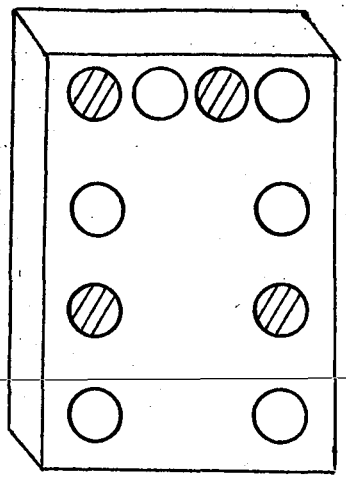
Electrical power of 110 volts a. c. is conducted to the mobile unit by a grounded cable which is wound on a built-in reel when not in use.

In preparing the mobile unit for service, the desired length of cable is removed from the reel and connected to a school power source.

The mobile unit is arranged with ten individual testing positions, or stalls. (See Plate 2 in Appendix A.) A desk for the operator and files and cabinets for storage are also included. Each of the testing stalls is outfitted with a dual receiver headset for group testing. Since the individual stalls do not provide sufficient separation from adjacent stalls to eliminate the possibility of pupils' being able to see one another's responses during a hearing test, an electronic switching arrangement has been installed. This switching arrangement divides the circuit so that the tones used in the hearing tests can be introduced either into the receivers of alternate stalls or to the receivers of all stalls simultaneously.

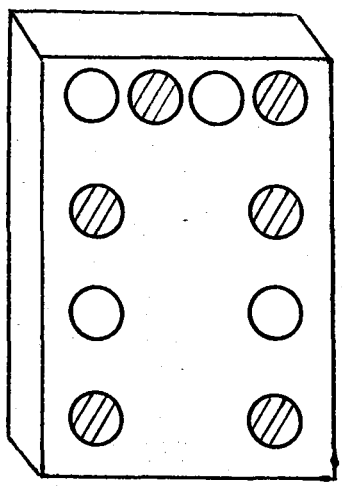
Testees seated in the individual testing stalls for the group screening test respond to the pure tones they hear by pressing electronic push-buttons; one button is mounted in each stall. Each button lights a corresponding bulb on a panel in front of the operator. (See Plates 2 through 5 in Appendix A.)

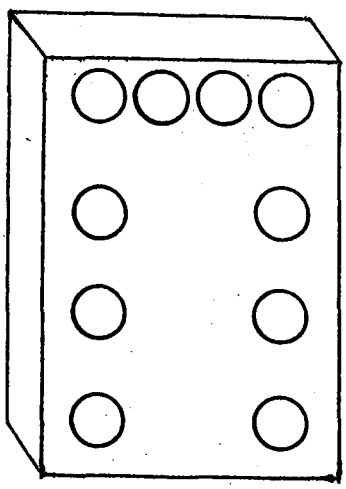
Figure 2 illustrates the arrangement of light bulbs on the panel, which are in the same relative arrangement as the testing



—— Selector switch in first position.

Selector switch in second position. ——





—— Selector switch in third position.

Light on: ○

Light off: ⊘

Figure 2. Patterns produced on the light panel.

stalls in the mobile unit. Also illustrated in Figure 2 are the three possible patterns produced when the testees respond to the hearing test tones. A selector switch determines which receivers shall receive the test tone.

If the selector switch is in the first position and the testees respond to the tone, lights corresponding to stalls number 1, 3, 5, 7, 8, and 10 will glow. When the switch is in the second position, lights corresponding to stalls number 2, 4, 6, and 9 will glow as the testees respond to the tone. When the switch is in the third position, responses to the test tones cause all of the lights to glow. Using these patterns gives some assistance to the operator in determining whether the proper responses are being made.

The instrument employed for all of the screening and threshold testing conducted in the mobile unit is a Maico Deluxe Model F-1 Audiometer. It is equipped with masking controls, a bone conduction receiver, and a microphone.

The mobile unit is moved from one location to another by an automobile which is furnished full-time for the hearing conservation program.

The intensity of ambient noise within the mobile unit was measured on a sound level meter which was placed where individuals

are administered the threshold hearing test. Readings of the meter varied from forty to forty-five decibels on the second scale when motor vehicles were not passing close to the unit.

CHAPTER V

METHODS AND PROCEDURES

I. The Hearing Survey

The Annual Schedule of Hearing Surveys

At the beginning of each school year a tentative schedule of the hearing surveys to be conducted in the schools served by the office of the county superintendent of schools is prepared and sent to all participating school districts and agencies. (See Forms 1 and 2 in Appendix B.) Throughout the year very few changes are necessary. Occasionally, equipment may fail or a school may require more time than was originally allotted. When this occurs, the time is made up from other aspects of the program since only three days per week are given to the actual testing of hearing.

Factors which influence the making of the schedule are distances between schools, inclement weather, nurse assignments, and the need for a regular survey period each year. Each district would like to be first on the list; but, in order to grant this privilege on a revolving basis, some schools would have three months between surveys one year and twenty months the next.

The amount of time allotted to each district for the hearing surveys is based on previous experience in testing the children of that district. The time allotted includes the amount necessary for travel and setting up the equipment. The schedule recognizes the possibility of early dismissal in schools which have only primary grades. In addition, time is given for conferences with school personnel. Dahl[8] suggests that one day is required for testing each one hundred fifty pupils. This is approximately the rate of time spent in each elementary district in the Stanislaus County schools program but additional services are also rendered in this time. Dahl bases her figure on a continuous testing schedule being maintained throughout the school day and intrudes into the regular school routine. The Stanislaus County program, however, seldom requires school administrators to change the routine of their schools. Bells are not stopped and recesses are allowed to continue as usual. The testing unit is usually placed away from school noises that may interfere with testing. Occasionally, audio-visual equipment or other activity from a nearby classroom must be quieted. If

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[8]Loraine Dahl, Public School Audiometry; Principles and Methods (Danville, Illinois: Interstate Publishing Company, 1949), page 230.

playground noises during recesses are disturbing, testing is suspended and the audiometrist does other work related to the hearing conservation program. Sometimes this affords opportunity to confer with teachers about children with hearing problems who are in their classes. Since there are usually only three recesses scheduled per day, few problems are presented. Some school districts, however, are staggering recesses for various grade levels. In those districts the administrators are requested to change the recess schedule if the mobile unit cannot be placed away from the playground noises.

In 1958-1959 the annual schedule provided for two hearing testing periods for each district per year. These periods were separated by approximately three weeks. The first period was for screening tests. The second period was for rechecking those who failed the screening test and for threshold testing. Thus a period of time was given for those hearing losses which were associated with upper respiratory infections to return to normal before a threshold audiogram would have been made. The present practice is to separate the testing periods by approximately six weeks.

The time interval between screening and threshold tests requires the moving and setting-up of the mobile testing unit an

additional time at each school. This plan, however, affords more valid referrals and is welcomed by physicians and others concerned with the program.

The present policy is to send the schedule of hearing surveys to each school administrator at the beginning of each school year. Accompanying the schedule is a letter addressed to the administrator asking him to clear the dates scheduled for the hearing survey in his school. The letter asks that excursions, assemblies, and similar special events be avoided during the testing periods.

Pupils Who Are Tested

The ideal school hearing conservation program includes the testing of all pupils each year.[9] The education code of the State of California states that all pupils shall be tested but does not specify the frequency of tests or which grades should be routinely checked.[10] In Stanislaus County schools each child is tested at least once every two years.

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[9]Hearing Testing of School Children (Sacramento, California: California State Department of Education, 1954), p. 4.

[10]Education Code, State of California, Section 16482.

All pupils in districts which have multigraded classrooms are tested annually. Approximately one-tenth of all pupils tested by the Stanislaus County Schools office are in these small districts.

In the larger schools only kindergarten, first, third, fifth, seventh, eighth, tenth, and twelfth grades are routinely given hearing screening tests each year. Special education classes are also routinely screened. Referrals are taken from the other grades not included in this survey. Teachers are asked to refer (1) new pupils, (2) pupils who state that they have had recent earaches, (3) pupils who have exhibited a sudden change in behavior during the current school year, and (4) pupils who are otherwise suspected of having hearing problems.

Advance Preparation

A month before the hearing survey is to begin in elementary schools, 11" by 14" printed posters are sent for each first and third grade classroom. (See Forms 3 and 4 in Appendix B.) These posters explain the hearing testing procedure and picture children entering the mobile hearing testing unit and also having their hearing tested. The posters are different for these two grades because a different testing procedure is introduced in the third grade.

Individual screening testing is performed on the first grade level, and group testing is performed on the third grade level. Each kind of poster explains the appropriate testing procedure using language suitable for the grade level for which the posters are intended. The pictures on the posters are of children from the grade level for which the posters are intended. Notes to the administrator and teachers explain the purpose of the posters. It is suggested to the teachers that they read and explain the posters to their classes and display them on a bulletin board.

A poster is also used for high schools. It is similar to the others and shows students of high school age participating in the group hearing test in the mobile testing unit. (See Form 5 in Appendix B.) High school administrators are requested to post these posters on major bulletin boards in their schools. The posters explain the hearing test procedure and indicate which categories of students will be tested. They also suggest that students who have symptoms of hearing difficulty, but are not in the classes scheduled to be tested, report this to the school nurse and request that their names be added to the list of students to be tested.

A poster similar to the type used for first grade classrooms is being planned for kindergarten classes. Information to be included

on the poster will be appropriate to the kindergarten level of understanding. The testing procedure used in the kindergarten will also be illustrated.

A visit is made by the audiometrist to the school administrator about one week in advance of the scheduled hearing survey in his district to discuss final plans for the survey. Such matters as placement of the mobile unit, activities which may interfere with testing, student assistants, and time of arrival are discussed. Forms for teachers to complete in preparation for the survey are left at this time.

Each teacher is requested to complete a form which is later used by the audiometrist for reporting individual test results after the hearing survey in each school. (See Form 6 in Appendix A.) The teacher is asked to list all of the pupils of her class who are to receive a hearing test. An instruction sheet is attached to the form and indicates which categories of pupils will be screened and which will be tested on a referral basis only. In the case of referrals, teachers are given suggestions as to whom should be referred. (See Form 7 in Appendix A.)

Assistants in the Survey

Two assistants who are either parents or students are usually used in the school hearing surveys. One assistant acts as a messenger and brings pupils to the hearing unit, keeping order among the pupils while they await their turns; the other assistant assists the audiometrist in seating children, adjusting their receivers, and observing them for attentiveness during the tests. Both assistants may be used for recording test results, disinfecting receivers, copying audiograms, filing, etc.

In each school the audiometrist requests from the administrator the assistance of two upper-grade students. The selection of student assistants in elementary schools is usually made by a teacher designated by the administrator. Eighth grade girls are usually chosen to serve. When testing in schools with primary grades only, assistants are usually obtained from the upper-grade school in the district. The students provided as assistants are nearly always the more able children.

Assistants in high schools are usually seniors selected from the future nurse organizations within the schools.

The same assistants are often employed throughout the survey of a particular school. Since tests are never administered on more

than two consecutive days at the same school, absence from class has not been found to significantly affect the assistants' academic progress.

Dahl recommends the use of student assistants or monitors[11] but does not attempt to justify their being removed from class. This practice has generally been accepted by administrators in Stanislaus County as a means of teaching responsibility and providing opportunity for a new experience.

Parents have been serving as assistants in one school district for four years. The idea was first suggested to school administrators and applied in three districts as an experiment in public relations. It met this objective but proved to require more time than does the use of student help. This resulted from the fact that most parents could not volunteer more than half a day's time, and additional time was required for explaining duties to more parents. Because of this and other problems encountered with the use of parents, they are now used in only one district. In this district they are still used since the administrator does not feel that he can justify students' absence from class to act as assistants.

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[11]Dahl, op. cit., p. 169.

II. Testing Procedures

Procedure in Elementary Schools

After the mobile unit is parked on the school grounds, the hearing survey report forms containing the names of pupils to be tested are obtained from the office and student (or parent) assistants are asked to report to the unit. The assistants are briefed on their duties, and the first group of children is brought to the unit.

Classroom Preparation

Only first grade students are visited by the audiometrist in their classrooms to prepare them for the hearing test. (See Plate 6 in Appendix A.) This is done only in surveys which are conducted during the first two months of each school year. After that time, the practice is to briefly explain the test to each small group in the mobile unit rather than in the classrooms. This saves considerable time, and only one or two first graders refuse to take the test each year out of the more than 800 first grade children who are screened annually.

The posters which are sent in advance of the survey to first and third grade teachers help to eliminate the need for a classroom visit. Apparently most teachers use the posters to good advantage

because the children react to the test the same as if they had been prepared by the audiometrist in their classrooms.

Within an hour before their pupils are to be tested, teachers of grades 3, 5, 7, and 8 are given printed instructions to be read to their classes. (See Forms 8 and 9 in Appendix B.)

Since third graders are the first to be screened in the group test which requires the pressing of a button, they are also sent a small metal box which contains a button similar to the one which they will press during the test in the mobile unit. (See Plate 7 in Appendix A.) The box is passed among the pupils so that they may become familiar with the operation of the button. When the button is properly pressed, a small light glows in the box.

Kindergarten Testing

Usually an entire kindergarten class can be taken into the mobile unit at one time for the screening test. After receiving instructions, which include the use of a hand puppet, the children are individually given a two-frequency screening test. The 1,000 and 4,000 c. p. s. frequencies are presented to each ear at 20 decibels. Only two frequencies are employed because the children fatigue quickly during the tests.

Two testing stations complete with dual headsets and matched receivers are established that can be controlled from the audiometrist's position. While one pupil is being tested at one station, another is being prepared at the other. This procedure saves the audiometrist approximately one-fourth the amount of time required when using only one headset.

The children respond to the test tones by raising one of their hands.

This testing procedure with kindergarten children has revealed losses at a rate of ten per cent of those tested, approximately the same as found in the first grade population.

Threshold tests of kindergarten children which show one ear normal and the other with a significant loss are referred for medical consideration. Those children with an apparent loss in both ears are given, in addition, a speech reception test before referral. Teacher observations are helpful in confirming such losses.

Testing Pre-school Children

The education code of the State of California allows for the hearing testing of pre-school children,[12] and the Stanislaus County

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[12] Education Code, op. cit., Section 9609.

Superintendent has approved it as part of the program of his office. Children are tested on an appointment basis. Although this service is available and some publicity has been given to it, only an average of three or four parents a year take advantage of it.

Individual Screening Method in Grades One and Two

Children in grades one and two are tested in the mobile unit with an individual sweep check. The same two station testing procedure is used as employed with kindergarten children. (See Plate 8 in Appendix A.)

Ten children are brought to the mobile unit and are seated in the unit. The test is explained to all ten pupils, and they practice responding to sample free field tones by raising one of their index fingers. Receivers are placed on the first child to be tested, and the sweep check proceeds.

The sweep check consists of frequencies 500, 1,000, 2,000, and 4,000 c. p. s. Frequencies below 500 c. p. s. are not presented because they render the approximate results of 500 c. p. s. [13]

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[13]Reger, Scott, and Hayes Newby, "A Group Pure Tone Hearing Test," Journal of Speech and Hearing Disorders, 12:61-66, 1947.

The Stanislaus County Advisory School Health Committee, composed of physicians and school health personnel, in a meeting with otologists in December, 1956, decided that the 8,000 c. p. s. frequency was unnecessary and would not be required to appear on audiograms given to physicians. Reasons given were that the tone is difficult to standardize and keep in calibration that a loss at 8,000 c. p. s. was not significant. [14]

Donald Caziarc, hearing conservation specialist for the California State Department of Public Health, concurs in use of the frequencies employed in the program for screening tests. [15]

Screening is accomplished with the audiometer set to render twenty decibels. This setting is based on another decision of the physicians and schools committee which was that the criteria for referral should be a loss of twenty-five decibels or more in any frequency, 4,000 c. p. s. or below. Less than twenty-five decibels would be acceptable only with accompanying severe symptoms. [16]

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[14]Minutes of Stanislaus County Advisory School Health Committee, December, 1956.

[15]Letter written to the writer in May, 1959.

[16]Minutes of Stanislaus County Advisory School Health Committee, op. cit.

Frequencies are tested in this order: Right ear - 2,000, 1,000, 500; left ear - 500, 1,000, 2,000, 4,000; right ear 4,000 c. p. s. Experience with 500 c. p. s. and 1,000 c. p. s. as the starting tone has shown that children are not apt to hear them unless the intensity is first increased by ten or more decibels. The writer believes there is also some value in presenting the 4,000 c. p. s. tone last since it is the most frequently missed and the testee at that point should be more familiar with the test.

After the test, the pupil is asked his name. The audiometrist records the result on the Hearing Survey Report Form. If his hearing is normal in both ears, a check is placed in the first column. A dash is marked in the second column if one or more tones are not heard. Losses involving more than the 4,000 c. p. s. frequency are noted over the dash.

Group Screening Method in Grades Three through Twelve

Students in grades three through twelve are screened in groups of ten at one time. (See Plate 9 in Appendix A.) Groups of pupils are brought to the mobile unit carrying name slips which were given them to complete in their classrooms in advance. Information requested on the slips includes name, grade, and teacher.

(See Form 10 in Appendix B.) The pupils enter the rear door of the mobile unit and are directed to sit at the ten various testing positions. The audiometrist and assistants place receivers on the pupils' ears. After the receivers are given a final check by the audiometrist, the instructions are presented orally.

The instructions are as follows: "Find the red button in front of you. When you hear the sound, press the button all the way down." (A 2,000 c. p. s. tone at forty decibels is now introduced into the right ears.) "Hold the button down as long as you hear the sound. When the sound stops, take your finger up, off the button." (The tone is sustained for approximately a total of four seconds and repeated until all positions respond correctly with their buttons.) "Do not watch the person next to you. Sometimes he will be able to hear a sound when you will not." (At this point the practice continues as the circuits are changed to show that all may not receive the tone simultaneously.) "The test will now begin. Close your eyes and face the wall. Some of the sounds will be very soft. Press your button for the soft sounds, too."

The tones are presented in the following order at fifteen decibels:

Right ear -	2000	c. p. s.	to	circuit	1
	2000	"	"	"	2
	1000	"	"	"	2
	1000	"	"	"	1
	500	"	"	"	1 and 2
Left ear -	500	"	"	"	1 and 2
	1000	"	"	"	2
	1000	"	"	"	1
	2000	"	"	"	1
	2000	"	"	"	2
	4000	"	"	"	1 and 2
	4000	"	"	"	2
	4000	"	"	"	1
Right ear -	4000	"	"	"	1 and 2
	4000	"	"	"	1
	4000	"	"	"	2

During the test the pupils who fail to respond to any tone presented are noted by the audiometrist. After the test is completed, the audiometrist says, "Take off the earphones and put them down in front of you. Bring your name slips to my desk as you leave by this front door."

The pupils are directed to place their name slips together in a pile on the desk while the audiometrist removes the slips of those pupils who failed one of the test tones and marks the slips which were removed.

As one group of pupils leaves, the next group enters the rear door.

The time required for this group test depends on the grade level being checked and how rapidly the pupils can be placed in position with receivers properly adjusted for the test and instructions given and understood. Third grade students usually require five minutes for the complete testing cycle; high school students may require as few as three minutes.

Procedure in Secondary Schools

The same procedure of group screening is employed in secondary schools as in elementary schools except for a few minor differences.

The pupil lists are prepared by the school office instead of the teachers. Nurses and counselors usually name the referrals.

In small high schools (400 or fewer students), sophomores are screened in one class period and seniors in another. An assistant goes to each classroom in which students of the grade being tested may be found and takes them in groups to the mobile unit. Instead of using name slips, an assistant who knows the names of students to be tested may check them off on the Hearing Survey Report Form as the students take the test.

The larger high schools prefer to send students from physical education classes to be tested.

Absentees

Pupils who are absent on the day their classes are screened are called for each day the survey of their school is in progress. Only about one in four hundred pupils who are scheduled to be tested is absent throughout the entire survey of a school.

Threshold Testing Method

Three or four weeks after the initial screening tests, the mobile unit returns to each school for rechecking and threshold testing. The audiometrist gives a list of pupils to be tested to an assistant and requests her to bring pupils in groups of six.

After a pupil is instructed and prepared for the recheck, a test of 4,000 c. p. s. at fifteen decibels is made in each ear. If the tone is heard in both ears, the sweep check is continued through 2,000, 1,000, and 500 c. p. s. at fifteen decibels in both ears.

Audiograms are not plotted for normal ears (within fifteen decibels) by agreement with the physicians and schools advisory committee.[17]

The 4,000 c. p. s. frequency is tested first in the recheck test because most losses include that frequency, and the remainder of the sweep check may, therefore, be unnecessary.

Threshold tests include the following frequencies: 250, 500, 1,000, 2,000, 4,000, and 6,000 c. p. s.

When the audiogram is completed, the pupil is asked if he has had recent earaches, running ears, or ringing ears, etc. Significant comments are then indicated on the audiogram form. (See Form 11 in Appendix B.)

There are two forms used for recording losses in addition to the plotted audiogram. One is a "recheck next year" form which is completed on cases having slight losses but who do not qualify for medical or educational referral. The other is an "old case unchanged" form for recording cases of non-progressive high frequency losses of children who received treatment and were

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[17]Minutes of Stanislaus County Advisory School Health Committee, December, 1956.

dismissed by physicians. On both of these forms only those frequencies not within normal limits are recorded. (See Forms 12 and 13 in Appendix B.)

Reporting Results of Hearing Surveys

The results of the annual hearing survey of each school district are compiled and sent to the administrator approximately one week after the threshold testing is completed. (See Form 14 in Appendix B.)

The report consists of several mimeographed forms (See Forms 15 through 19 in Appendix B.) which include (1) the names of all pupils tested and the results of the tests, (2) the hearing status of cases found to have hearing losses in the previous year's survey, (3) a statistical summary indicating the number of children tested and the number of losses found, listed by grade, (4) audiograms of all pupils with losses, (5) and the names of pupils who had no hearing losses but were observed to have significant symptoms--harsh voices, mouth breathing, etc. Copies of the report are forwarded to the teachers and school nurse. The teachers mark the results of the hearing tests and enclose copies of audiograms in the pupils' health

records. The school nurse receives audiograms and lists of children with hearing losses or significant symptoms to use in her medical follow-up.

A report on old cases is sent to the County Health Department to assist in keeping current the records of children under the state crippled children's program.

The speech therapist assigned to the school concerned also receives information on hearing losses. He is notified of all pupils having an average loss of twenty decibels in the speech frequencies in both ears. These pupils are identified as being either recently found or old cases with a stationary or progressive loss. Appropriate audiograms are attached.

III. MEDICAL AND EDUCATIONAL FOLLOW-UP

Medical Follow-up

A school nurse is assigned to every public school in Stanislaus County except one small secondary school which receives assistance when it is available from the health department.

The school nurse makes all initial home contacts in connection with hearing problems discovered in the schools. These contacts are almost always in the homes of the parents. Telephone

or written communications are seldom used. In accordance with state law, the nurse suggests to the parent that a medical advisor be consulted regarding the child's apparent hearing loss. If financial ability to pay for such counsel is a problem, the parent is advised of the California State Crippled Children's Service and other agencies which assist children who qualify for care from public funds.

Many counties in California have otological clinics under the auspices of county or city health departments. The Stanislaus County Health Department has changed from this practice to that of making direct appointments in the private offices of local practicing otologists. This plan was instituted because more parents were seeking private care and the demand for clinical diagnostic services no longer warranted the time which it required of nurses, physicians, and audiometrists.

Educational Follow-up

The hearing consultant informs all teachers having pupils with significant hearing losses as to the nature of their handicap. He suggests classroom adjustments and makes educational recommendations. (See Plate 10 in Appendix A.) The California State Department of Education defines a loss of twenty decibels or greater

in the speech frequencies in both ears to be severe enough for educational consideration.[18] In addition to this, the Stanislaus County Schools Hearing Conservation Program considers those children with an average loss of thirty decibels or more in the speech range in one ear as requiring some adjustment in the classroom.

Each teacher is visited regularly and upon request to discuss the total adjustment problems of her hearing handicapped pupils. The teacher is provided professional and instructional materials as required. Desk amplifiers are made available for children who may benefit from their use.

As part of the speech therapy program, the children with a significant loss in both ears are given speech reading, speech correction or conservation, and auditory training. The speech therapist, because of his homogeneous grouping by defect, does spend time on needed speech correction. The other services require too much individual attention for a crowded schedule and are, therefore, often neglected.

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[18]Statement by a department of education representative made to the writer during a personal interview.

Pupils who are not able to adjust acceptably to the regular classroom program are considered for placement in one of the two day classes for the deaf and hard of hearing which are maintained by one of the county's school districts. The decision for placement is based on an evaluation by the teacher, administrator, school nurse, psychologist, general consultant, speech therapist, and hearing consultant.

CHAPTER VI

A FOLLOW-UP STUDY OF THE STANISLAUS COUNTY SCHOOLS HEARING SURVEY 1957-1958

In order to study the effectiveness of the medical and educational follow-up of pupils with hearing losses found in the schools served by the Stanislaus County Schools Office, the survey of the 1957-1958 school year was selected. This particular survey was selected because sufficient time has elapsed to provide an ample opportunity to review the subsequent action taken on each case of hearing loss.

Thirty-seven school districts were surveyed during the 1957-1958 school year. The districts ranged in size from an elementary school with one room and fourteen pupils to a high school with 1,367 students. The usual policy was to test all students in grades one, three, five, eight, ten, and twelve and from the other grades new students, previously known hearing problems, and children suspected by teachers to have hearing losses.

I. TESTING DATA

The results of the 1957-1958 survey are presented in Table I. Of a total of 7,783 pupils screened, 9 per cent were found to have a

TABLE I

RESULTS OF STANISLAUS COUNTY SCHOOLS

HEARING SURVEY 1957-1958

Grade	Number of pupils screened	Number of hearing losses found	Percentage found
Kindergarten	107	19	18 %
+ 1	1015	93	9
2	441	46	10
+ 3	909	67	7
4	367	33	9
+ 5	866	49	6
6	313	42	13
7	308	39	13
+ 8	815	64	8
9	231	43	19
+ 10	1239	91	7
11	191	51	26
+ 12	836	65	8
Segregated mentally retarded	145	32	22
Totals	7783	734	9 %

The total number of losses, 734, is 5 per cent of the total enrollment of the schools surveyed, 13, 928.

+Grades in which all pupils were tested. Pupils tested in the other grades were on a referral basis, had a hearing loss in the previous survey, or were new to the school.

hearing loss. Hearing losses found in those grades in which all pupils were tested ranged from 6 to 9 per cent. The grades in which students were tested primarily on referral yielded a much higher percentage of hearing losses. This probably occurred because those pupils with previously known losses were included in addition to those referred by the teachers.

When the data were computed on the total enrollment of the schools in the survey, which was 13, 928, the percentage of students with a hearing loss was found to be 5. This is consistent with the national average which is estimated to be from 5 to 7 per cent. [19]

Several California public schools, in responding to a survey conducted by the State Department of Education, reported a 5 per cent rate of students with a hearing loss among the pupils tested during the school year 1957-1958. [20]

The higher percentage of hearing losses found in Stanislaus County may possibly have been a product of the particular characteristics of the criteria which were selected for the definition of a

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[19]Hallowell Davis, M. D., et al., Hearing and Deafness (New York: Rinehart and Company, Inc., 1947), p. 355.

[20]California State Department of Education, Report of Audiometric Testing 1957-1958 (Sacramento: Mimeographed), p. 55.

hearing loss. The criteria, described in Chapter VII of this work, were somewhat more liberal than those usually employed. Another influencing factor might have been the short period of time which elapsed between the initial screening and the final threshold tests which varied from one to twelve days.

II. MEDICAL FOLLOW-UP

One nurse from the Stanislaus County health department and seven school nurses participated in the medical follow-up of the 734 cases of hearing loss which were revealed by the 1957-1958 survey. Their participation consisted largely of reporting and interpreting the findings to parents and suggesting, in most cases, that immediate medical care be obtained.

Some nurses contacted parents in all instances in which children were found to have a hearing loss even though they did not feel that immediate medical care was needed.

It appeared that, while a few nurses approached any hearing loss as an emergency, some preferred to take a wait-and-see attitude with cases which, in their own judgment, were less than severe.

In an attempt to ascertain the amount of success in the reporting and referring part of the hearing conservation program, each nurse was asked to give information regarding her contacts with parents and the disposition of cases in schools under her observation.

As indicated in Table II, 464 cases of hearing loss out of the total 734 found to have a loss during the survey have supposedly received medical attention. Most of these cases were actually known by the nurses to have been seen by physicians. The parents of the pupils in the other instances have given reasonable assurance that professional care would be provided.

Cases totaling 146 in number were not reported to parents because it was felt that reporting was not warranted. Of this number, 50 were classified for later recheck only. Apparently, the adopted criteria for medical referral of hearing losses are not entirely accepted by the school nurses since they did not choose to report to parents 78 new cases and 18 old cases. It is interesting to note that 12 other cases referred to nurses for recheck only were actually reported to parents; and 8 of them were supposedly seen by a physician.

There were 95 children with hearing defects who were reported to parents but were not taken to physicians. Apparent

TABLE II

MEDICAL FOLLOW-UP OF HEARING LOSSES FOUND IN STANISLAUS COUNTY SCHOOLS HEARING SURVEY 1957-1958

Status of case found	Referable new cases	New cases for later recheck	Old cases	Totals
Not reported to parents for any reason	78	50	18	146
Reported to parents but not seen by physicians for various reasons[1]	75	3	17	95
To have been taken to physicians	259	8	197	464
Moved before reported	25	1	-	26
Disposition unknown	-	-	3	3
Totals	437	62	235	734

[1]Reasons for parents' not taking their children to physicians were that immediate medical attention was not urged by the nurse and/or parents refused or neglected to seek medical aid.

[2]Most of the cases which were considered to have been taken to a physician actually did receive medical attention. The remaining few were assumed to have received professional care on the basis of stated intentions of the parents.

reasons for parents' not taking their children to physicians were that immediate medical referral was not urged by the nurse, that they neglected the matter, or that they refused to take action.

The disposition of 3 cases is unknown. Twenty-six other cases moved from the schools before any action had been taken by the nurse.

CHAPTER VII

EVALUATION OF THE STANISLAUS COUNTY SCHOOLS HEARING CONSERVATION PROGRAM BY OTOLOGISTS AND NURSES

Others who are a part of the total Stanislaus County Schools Hearing Conservation Program were requested to participate in an evaluation of the program. Questionnaires[21] were sent to all (three) practicing otologists in the county and to the school nurses (seven) involved in the follow-up procedure of reporting hearing losses to parents. Separate forms were given to the otologists and nurses although some questions were similar. One hundred per cent of the questionnaires were completed and returned.

I. SUMMARY OF RESPONSES TO OTOLOGIST QUESTIONNAIRE

I. Purpose: To assist the County Schools Office in evaluating and improving the hearing conservation program.

II. Current criteria for the medical referral of hearing losses.

A. A loss of 20 decibels or more in three or more of the following frequencies: 250, 500, 1000, 2000, 4000, and 6000 cycles per second.

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[21] Copies of the questionnaires are in Appendix C.

B. A loss of 35 decibels or more in any one of the following frequencies: 250, 500, 1000, 2000 or 4000 c. p. s.

III. Questions.

A. Do you feel that the above criteria are satisfactory?

All otologists agreed with the criteria and indicated their satisfaction with it. One otologist commented, however, "If the environment is particularly quiet, test at 15 decibels (except in younger groups)."

B. Do you feel that medical referral is indicated for cases having a 35 db. loss at 4000 c. p. s. but with no loss in other frequencies? ____YES ___NO If not, which high frequency losses do you feel should be referred?

Two of the otologists answered that this type of loss should be referred, one stating, "This may be a way of picking out noise-susceptible individuals and starting a program of prophylactic care." The third otologist said that it was a matter for record and information only.

C. Do the audiograms which you receive from the schools usually contain the kinds of information you need? ___YES ___NO

The otologists indicated that the audiograms received from the schools usually contain the kinds of information they need. No suggestions for improving the audiogram form were given.

D. Please indicate any other information or improved services which you would like to have from the schools concerning hearing loss cases.

The only notation made concerning the improvement of services was by one otologist who stated, "Occasionally bone conduction thresholds are desirable."

E. Please enter other comments you may wish to make.

Additional comments made were: "An excellent program--very definitely beneficial"; "In general, the program is well set up--I have been pleased with it since I have been in this area"; and "Believe present program satisfactory."

II. SUMMARY OF RESPONSES TO NURSE QUESTIONNAIRE

I. Purpose: To assist the County Schools Office in evaluating the hearing conservation program.

II. Statement of Current Practice

A. Threshold audiograms are made of pupils who have the following losses:

1. 20 decibels or more in three or more of the following frequencies: 250, 500, 1000, 2000, 4000, and 6000 cycles per second.

2. 35 decibels or more in any one of the following frequencies: 250, 500, 1000, 2000, or 4000 cycles per second.

B. A "hearing recheck" form is usually completed for losses which do not qualify for threshold audiograms and are intended only for later rechecking.

C. An "old case, unchanged" form is usually completed for pupils with former high frequency losses which have not changed significantly. Only the threshold of frequencies not within the normal limits are indicated on the form.

III. Questions.

A. Would you like to see the above referral criteria and practices changed in any way? ___YES ___NO.

Four of the school nurses indicated that they would like to see the criteria and/or practices changed; three were satisfied with the present program. Two nurses suggested eliminating the referral of losses involving the 4000 c. p. s. frequency only. One suggested that there need be no audiograms provided on high frequency losses unless some note is added to prevent teachers from believing that the loss has educational significance.

B. If you do not choose to refer for medical care a loss of 35 db. at 4000 c. p. s. only, please describe high frequency losses which you would feel secure in referring.

Accompanying symptoms such as earaches were described by three nurses as being a necessary factor in the decision to report high frequency losses to parents. Three other nurses stated that they would also refer such losses if they significantly progressed.

One of these nurses indicated that she felt secure in referring high frequency losses which remained unchanged after several months.

One nurse did not answer the question.

C. Do you occasionally refrain from reporting cases to parents for which an audiogram has been completed? ___YES ___NO. If so, please give a typical example.

All of the nurses responding to the questionnaire disclosed that they do occasionally take no action on hearing losses brought to their attention in audiograms. One nurse said that she would not report any case having an audiogram which showed a loss at the 4000 c. p. s. frequency only. Two nurses would refer such losses if they were progressive losses or had accompanying symptoms. Two responses indicated that stationary high frequency losses were reported to parents after rechecks.

Two nurses cited recent respiratory conditions as a reason for failure to report losses in any frequency unless there were accompanying symptoms of a serious nature. Another would not report losses following illnesses such as measles.

"Borderline" losses are not reported to parents by one of the nurses unless a conversation with a teacher reveals frequent colds

or other symptoms; this nurse prefers to have a recheck audiogram in such cases.

Still another nurse would not refer any loss without inquiring into the child's health history and finding other factors on which to base her case.

D. Do the audiogram forms which are used provide you with sufficient kinds of information for adequate processing? ___YES ___NO

All nurses agreed that there are sufficient kinds of information provided on the audiogram forms for adequate processing.

E. What suggestions do you have for improving the audiogram form?

Two nurses stated that teachers and county health personnel interpret the symptoms checked on audiograms (earaches, drainage, etc.) as being established medical fact. They suggested that the form be more explicit in identifying such information as a statement made by a child or as an observation made by the audiometrist during the hearing test.

One other comment about the form was that placing consecutive annual audiograms of a child on the same page might help in making comparisons through the years.

F. Do the reports of annual hearing surveys provide you with the information needed in your follow-up and recording procedure? ___YES ___NO.

Five nurses indicated satisfaction with the annual hearing survey reports in providing them with information needed in the follow-up and recording procedure. The other two nurses failed to answer the question.

As to suggested changes, omissions, or additions to the survey reports, only one nurse had comments to make. She believed that the symptoms reported on the audiogram form are "of little or no value--these youngsters usually have a report in the health record." Suggesting further that the form "additional nurse referrals" is not needed, she claimed, "Some nurses feel that this infers (to the administrator) that she isn't on the job whereas the health record may have considerably recorded."

The same nurse recommended that no hearing test be administered to a child who has a cold. She stated that any loss under such circumstances would be considered by the nurse to be a "temporary loss, at least not a true evaluation of a hearing loss upon which to base a parent conference."

G. A good hearing conservation program is dependent upon good working relations among the following personnel and agencies. Please check those with which you have experienced difficulty and describe typical problems.

Four nurses reported that good working arrangements existed among all those concerned with the hearing conservation program. One statement was, "I have not experienced any difficulty and have had occasion to follow-up with all listed at one time or another." Another nurse commented that individual personalities do sometimes require special skill in human relations.

The other three nurses felt that some improvements are to be desired. Their major concern was the physicians in general practice who treat hearing loss cases but know little about ears and hearing. One nurse stated that the physicians do not take some cases seriously enough and give inadequate treatment--"They do not recognize fluid behind the drum unless the drum is red." Two nurses commented that physicians sometimes "inform parents that the student has a mild loss and/or no hearing loss and makes no recommendations" or he says, "All children get some loss--nothing wrong."

Other criticisms were directed toward (1) a school administrator whom a nurse thought should have been more cooperative in facilitating hearing surveys in his school, and to

(2) the local California State Crippled Children Service administration because some high frequency loss cases were rejected although they qualified under the criteria established for C. C. S. by the California State Department of Public Health.

CHAPTER VIII

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

I. SUMMARY

The purpose of this study was to describe in detail a school hearing conservation program and to evaluate the hearing conservation program of the Office of the Stanislaus County (California) Superintendent of Schools.

A complete description of the hearing conservation program of the Office of the Stanislaus County Superintendent of Schools was presented. Included was a discussion of the philosophy underlying the program and a delineation of the methods and procedures employed in the administration of the program. Samples of the various printed forms utilized in the testing, reporting, and follow-up processes appear in the appendix with an explanation as to each form's function.

A chapter is devoted to a statistical presentation of the hearing surveys conducted during a typical school year. Of the 7,783 pupils screened, 734 had a referable hearing loss according to the established criteria. This represents approximately five per cent of the total enrollment of the schools surveyed, which amounted

to 13, 928 pupils. Of the 734 referable cases, 586 were reported to parents. They were contacted in their homes or by telephone by the school nurse. In 464 of the cases the parents indicated that the pupil would be seen by a physician. The balance of the cases were not reported to parents for a variety of reasons.

Questionnaires were sent to the local otologists and school nurses who are involved in the hearing conservation program. It asked them to evaluate certain aspects of the program pertaining to their work. Suggestions for improving the referral critoria and reporting procedures were requested.

II. CONCLUSIONS

The majority of the policies and procedures of the hearing conservation program of the Office of the Stanislaus County Superintendent of Schools as evaluated appear to be adequate. They appear to be providing the greatest amount of service to school children in the time allotted. The following elements of the program appear to warrant special review. Where the study has indicated the need for modification, they are noted.

Administration

The administration of a hearing conservation program as a function of the department of health education (including health services), rather than the department of special education, may be considered atypical. The writer has found workers in the field of audiometry to be in disagreement on this arrangement. Opinions appear, however, to be based on an individual's background and training. School nurses who perform audiometry favor the placement of hearing conservation with other health services, whereas speech and hearing therapists who perform audiometry prefer its alignment with special education.

Most of the time given by the audiometrist-hearing consultant to the program is spent in hearing evaluation rather than in educational follow-up. This in addition to the fact that more frequent contacts are made with health personnel than with special education personnel by the audiometrist-hearing consultant, it appears that the administration is properly placed in this instance.

Equipment--Mobile Unit

The use of a mobile unit in the program has proved satisfactory for the following reasons:

1. It assures an adequate testing space at each school. Some schools could provide no better place than a boiler room or store room.
2. It can be moved around at a particular school to avoid undesirable noises.
3. It is more feasible for an office such as the one administering this program to provide a mobile unit than to require each school district served to provide a comparable room.
4. It saves time otherwise required for setting-up and dismantling testing equipment by allowing the items to be permanently installed in one place. Excessive wear of portable equipment is also eliminated.
5. It lends itself to the establishment of a more complete laboratory including numerous pieces of equipment that could not be easily carried from school to school.
6. It provides a common testing environment for all schools served.

The trailer-type unit appears to be more practical than the self-propelled bus-type unit in this program because it (1) represents a much lower investment, (2) is less expensive to operate and

maintain, (3) may be left at a school to save wear and possible damage to testing equipment, and (4) leaves the towing automobile available for use as transportation for the audiometrist in other activities of the program not requiring the use of a mobile unit.

Ventilation and Cooling. The ceiling exhaust fans are very effective in changing the air in the unit, requiring about three minutes for a complete change of air. However, the fans are now on the same circuit as the light fixtures in the mobile unit. When the fans are turned off, the lights go out. If the fans were placed on a separate circuit with a switch near the desk, it would permit independent operation of fans and lights as needed. It appears that more efficient ventilation may be possible if one of the fan's blades were reversed to provide air intake as the other fan exhausts.

The refrigeration air conditioning unit is capable of providing adequate cooling in the unit as insulated during days with a high temperature of 95°F. after approximately three minutes of operation. Operation is not recommended during periods of testing.

Partitions Between Testing Stalls. The split circuit arrangement utilized in the group hearing test allows test tones to be presented to alternate students. This reduces the possibility of

copying responses during a test. However, there is always the possibility that individuals may be distracted by those in adjacent stalls. Larger partitions between stalls would help prevent these distractions.

Sound Treatment. Although the sound treatment of the mobile unit is fairly satisfactory, close playground noises, passing motor vehicles and aircraft interrupt hearing tests. Previous studies of the possibility of installing more sound treatment have indicated that the trailer would have to be almost entirely rebuilt or that the added weight at this time would unbalance the unit. In new construction the problem of acoustics and weight distribution should be considered by competent engineers.

Equipment--Testing

Electronic Push-buttons. The push-buttons installed in the mobile unit for individual and group testing were especially designed for this program and probably are the only devices of their type to be found in use for hearing testing responses. The push-button included with some audiometers is not easy to operate and quickly causes

fatigue to its user. The device developed for the Stanislaus County program has the following advantages:

1. It requires only two and one-half ounces of pressure to close the circuit.
2. It is mounted at a comfortable height and may be activated by any finger or palm of the hand, thus allowing for a change in the event of fatigue.
3. It makes contact when the button is depressed by only one-third of its total excursion.

Speech Audiometer. A speech audiometer may be helpful for verifying hearing losses in the speech frequencies among young children and others suspected of having functional losses. It may also be useful in determining whether hard-of-hearing children are using their hearing aids correctly and if the instruments are adequate.

Group Test Controls. The controls for the group test circuit are apart from the audiometer, and the light panel is not mounted in a fixed position. The lights on the panel tend to glare. All of these items would facilitate testing if they were housed in one unit or

cabinet. If this were done, the lights could be installed behind glass jewels to eliminate the glare.

Testing Methods and Procedures

Grade Levels Routinely Screened. The grade levels which are routinely screened annually include kindergarten and grades 1, 3, 5, 7, 8, 10, and 12. Although this arrangement allows each child the opportunity to be tested at least every two years, it may be more practical to change the pattern to include the second grade as well as kindergarten and first grade, and the even numbered grades thereafter. In this arrangement (K, grades 1, 2, 4, 6, 8, 10, 12) more young children, who appear to have more significant losses, can be tested. This would provide a better interval of testing.

Preparing Children for the Tests. The printed posters which are used by teachers in preparing children in advance of hearing surveys are apparently very helpful. Because of the successful use of posters in grades 1, 3, and in high schools, another one probably should be developed for kindergarten classes because of a different testing procedure being employed. Some benefit may be derived from providing a poster for use in grades 4-8, whether they are routinely

screened or not. Posters for use in grades in which pupils are screened only on a referral basis could assist the teacher in pointing out the conditions which suggest the need for a hearing test.

Methods of Responding to Test Tones. Pupils who are tested in the program may be instructed to give three different types of responses to the test tones at various grade levels. Kindergarten children are instructed to respond by raising a hand. The first grade children are instructed to respond by raising a finger. However, children are permitted to use either the finger or entire hand as they desire. A push-button response is satisfactorily used with children in the second grade and above. Its use in the first grade and kindergarten has not been given a thorough trial. The hand response is used with kindergarten children because the puppet which is employed by the audiometrist to demonstrate the procedure just prior to the tests has no "fingers."

For pupils in the third grade and above the push-button is apparently the best responding device. It is a well-defined and positive response. The button is either pressed or not pressed; the corresponding light indicates to the audiometrist whether the response has been made or not. Hand and finger responses are often

vague and poorly defined, leaving the audiometrist to wonder whether the hand or finger is actually "up" or "down."

Steps should be taken to reduce the number of responses utilized in the program to either one or two. Studies should be conducted to determine whether first graders or even kindergarten children could use the push-button. The hand response should be used only in those grades in which the children are not able to adjust easily to the push-button.

Frequencies Used in Screening Tests. In consideration of the short attention span of kindergarten children, the two frequency (1000 and 4000 c. p. s.) test should continue to be used at that grade level. Research indicates that those frequencies are the best to be used in limited frequency screening.[22] On higher grade levels the additional frequencies of 500 and 2000 c. p. s. provide adequate screening for this program. This appears to be adequate since losses in frequencies above 4000 c. p. s. are not referable and

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[22]Sataloff and Menduke, "Single and Double Frequency Screening in School Children," abstract in Journal of Speech and Hearing Disorders, 25:2, May, 1960, p. 210.

research has shown that if there is a loss below 500 c. p. s. it can be expected that a loss will also be present at 500 c. p. s. [23]

Screening Intensity Level. The attenuator setting for all screening tests has been regularly set at twenty decibels. This practice is the result of the decision of local otologists in adopting a criteria of referral requiring hearing losses to be at twenty-five decibels or greater. It may be advisable to screen at fifteen decibels and keep records of slight losses which are not referable, providing for their later recheck for possible referral.

Follow-up Study of Hearing Surveys of 1957-1958. The follow-up study of the hearing surveys conducted in the year 1957-1958 revealed a percentage of hearing loss cases which was comparable to the state-wide average (see page 49 of this work). This would seem to indicate that the results of the methods and procedures employed in the Stanislaus County program are consistent with other programs.

The follow-up study also revealed that some school nurses are not reporting to parents all hearing losses discovered in the

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[23]Reger, Scott, and Hayes Newby, loc. cit.

surveys. Also, some are reporting those losses but are not suggesting medical care in all instances. Apparently the adopted criteria for the medical referral of hearing losses are not entirely accepted by the school nurses. Perhaps joint meetings of school nurses and otologists could bring about consistent handling of hearing loss cases.

Evaluation of the Program by Otologists. The questionnaires completed by the otologists indicated their complete satisfaction with the program as it was established. Their replies indicated, however, that their criteria for the referral of high frequency losses should be reviewed with the purpose of reducing over referrals. Another meeting with the physicians and schools Advisory School Health Committee, along with the otologists, would be helpful in working out this matter.

Evaluation of the Program by Nurses. The nurses, in their questionnaires, suggested a change in the criteria for referral of hearing losses which involve only the high frequencies. Perhaps the high frequency losses should be recorded but be referred only after a progressive loss is noted or when the onset of the loss is sudden and severe. It would be helpful to conduct a follow-up study of such

cases to determine when, if ever, they should be reported to parents. In any consideration, nurses should review the general problem of the criteria for referral before meeting with the otologists to agree on some degree of uniformity in reporting hearing losses to parents.

The nurses also recommended changes in the audiogram form. One suggestion is that for the benefit of teachers the audiogram should indicate clearly whether or not a loss would interfere with the hearing of speech sounds or have other educational significance. This may be accomplished, but the writer believes that there is no substitute for personal conference with the teacher concerning the educational implications of hearing losses of her pupils.

The second suggestion regarding the audiogram concerned the section titled "Symptoms reported." It was their suggestion that the "symptoms reported by pupils" and the "symptoms observed during the test" be so identified. This change should be made.

Another problem mentioned in the nurses' evaluation was an apparent lack of understanding on the part of physicians in general practice of the policies and procedures of the hearing conservation program in Stanislaus County. This and other comments frequently

heard by the writer suggest that a simple brochure outlining the objectives and procedures of the program should be distributed to all physicians in the county.

Summary of Recommendations

The following is a summary of the recommendations previously discussed in this chapter.

1. Place larger partitions between testing stalls in the mobile unit.

2. Wire exhaust fans in the mobile unit on a circuit separate from the lights. Place the switch for the fans near the audiometrist's desk.

3. Purchase or construct a cabinet that will house all of the controls for the hearing testing equipment in the mobile unit.

4. Install a speech audiometer in the mobile unit.

5. Make changes in the grades routinely screened so that the following grades will be screened annually: kindergarten, 1, 2, 4, 6, 8, 10, and 12.

6. Prepare printed posters for the preparation of children for the hearing tests to be used by teachers of kindergarten and grades 5, 7, and 8.

7. Prepare printed posters to be used by teachers to help identify children in the grades which are not routinely screened. A device should provide an opportunity to indicate symptoms which may warrant a hearing test and otherwise suggest the conservation of normal hearing.

8. Consider reducing the number of different types of responses used by the children in responding to hearing test tones. Conduct studies to determine whether the push-button response can be satisfactorily used by kindergarten or first grade children. Use the hand response in those grades in which the push-button does not prove to be practical.

9. Conduct all screening tests at fifteen decibels. Record all losses (twenty decibels or greater in any one frequency screened) which do not otherwise qualify for referral according to local criteria. Recheck those losses during the following annual hearing survey.

10. Record all losses which are only in the high frequencies and refer only those which are progressive. Refer any high frequency losses which develop suddenly.

11. Change the audiogram form to indicate whether the loss recorded would interfere with the hearing of speech.

12. Change the audiogram form to indicate which symptoms are reported by the pupil tested and which are observed by the audiometrist.

13. Conduct meetings with the school nurses to review the criteria for referral.

14. Prepare a brochure about the program to be sent to all physicians in general practice in Stanislaus County. Outline the hearing conservation program, including criteria for referral and procedures in general.

IV. RECOMMENDATIONS FOR FURTHER RESEARCH

While conducting this study, some areas of audiometric procedure appeared to the writer to warrant additional study and exploration. The following items are therefore recommended for further research.

1. Determine which of the following response techniques employed in pure tone hearing testing procedures is the most efficient with average children of various ages: hand response, head response, finger response, electronic push-button response.

2. Determine the reliability of a group hearing test which employs a push-button electronic response.

3. If a group test which employs a push-button electronic response proves by research to be an efficient test, determine the optimal number of subjects which may be so tested simultaneously.

4. Determine the average amount of time that should be required to prepare children of various ages for a pure tone hearing screening test.

5. Determine which frequency is best used as the starting frequency in a sweep test employing four or more frequencies; i. e., which frequency at fifteen decibels can be most easily recognized by a child receiving his first pure tone test.

6. Determine the significance of high frequency losses for the purpose of establishing a practical criteria for their medical referral.

7. Determine the general significance of a hearing loss which is accompanied by an upper respiratory infection for the purpose of establishing a practical criterion for its medical referral.

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APPENDIX A

Plate 1. The mobile hearing conservation unit.

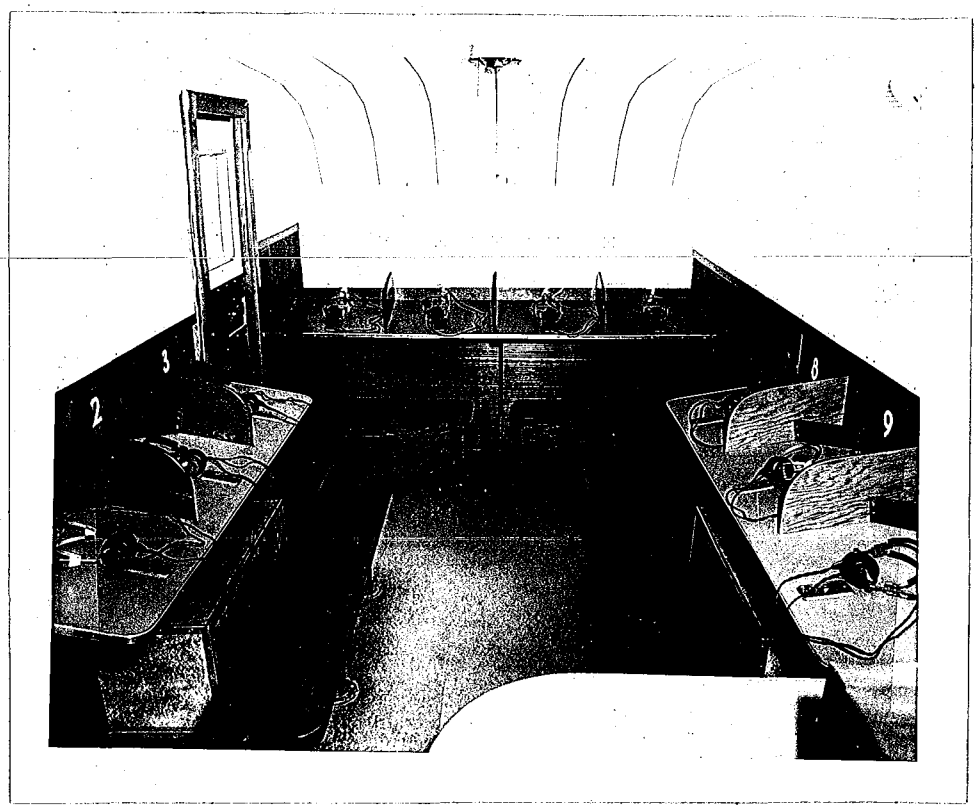


Plate 2. Interior of mobile unit showing the arrangement of testing positions.

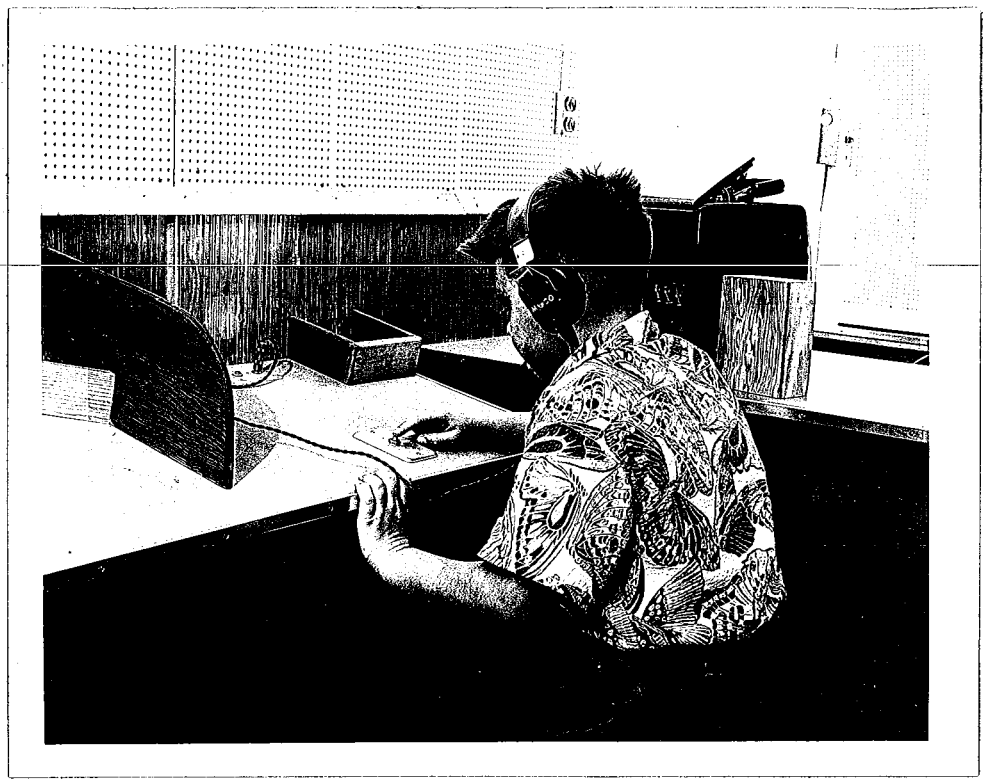


Plate 3. A pupil using the push-button.

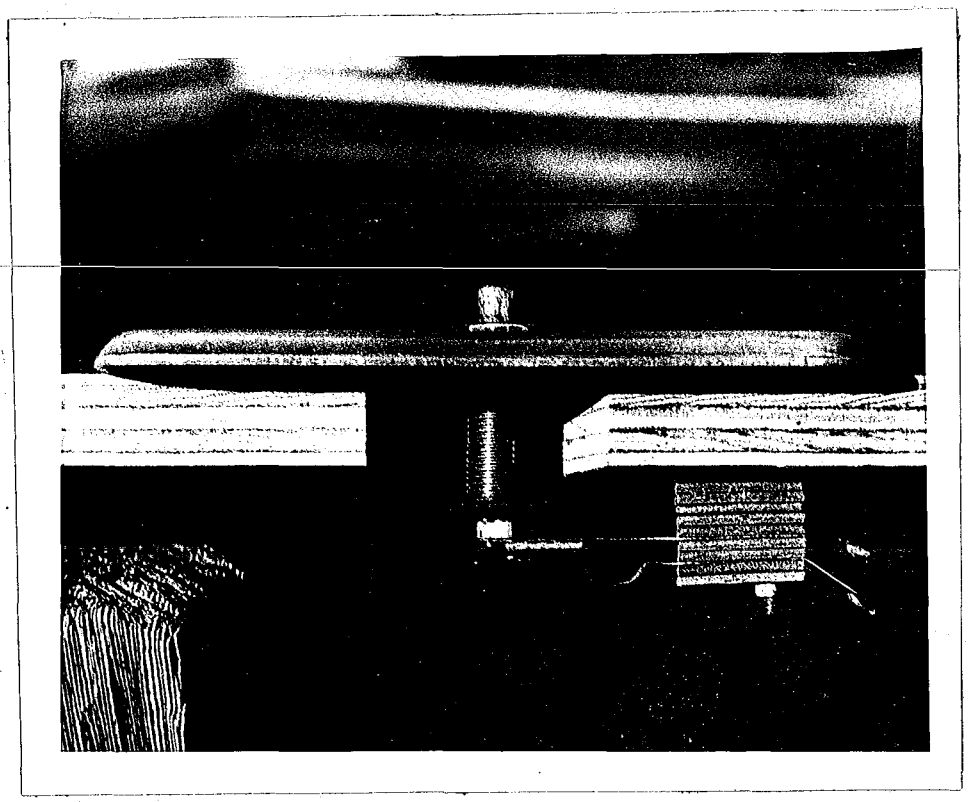


Plate 4. Cut-away view of the electronic parts of the push-button.

Plate 5. The light panel and audiometer.

Plate 6. Preparing first grade pupils in their classroom for the hearing test.

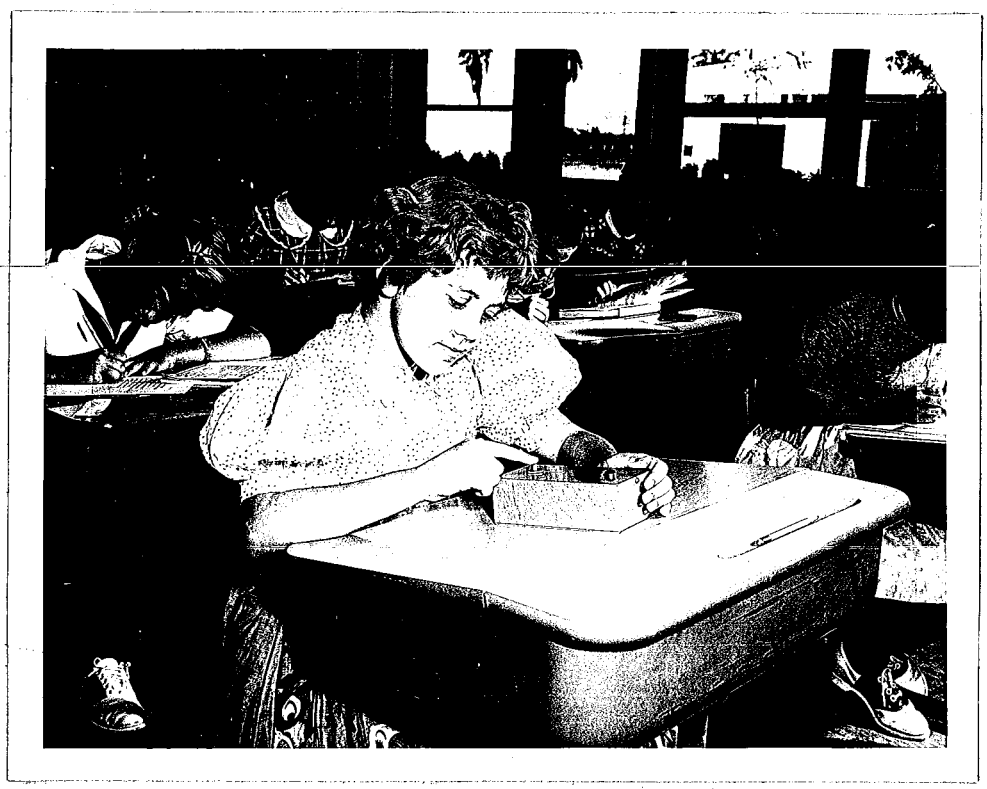


Plate 7. A third-grade pupil using the push-button on the box utilized in preparing children for the group hearing test.

Plate 8. A first-grade pupil receiving the individual hearing test in the mobile unit.

Plate 9. Fifth-grade pupils receiving the group hearing test in the mobile unit.

Plate 10. Audiometrist-Hearing Consultant discussing a hard of hearing child with a school administrator, classroom teacher, and school nurse.

APPENDIX B

Form 1. Schedule of annual hearing surveys.

Stanislaus County
DEPARTMENT OF EDUCATION
2115 Scenic Drive, Modesto, California
P. O. Box 1697 LAmbert 4-1251

FRED C. BEYER
Superintendent

SCHEDULE OF ANNUAL HEARING SURVEYS
1961 - 1962

Health Services - Hearing Conservation
R. M. Colville, Coordinator and Audiometrist

SEPTEMBER
14 Newman, Von Renner
18 Newman, Von Renner
19 Newman, Yolo
21 Bonita
25 Bonita
26 Orestimba High
28 Patterson, Northmead

OCTOBER
2 Patterson, Northmead
3 Patterson, Las Palmas
5 Patterson High
9 Grayson
10 Rising Sun
12 Westport
16 Shiloh
17 Paradise
19 Hart-Ransom
23 Hart-Ransom
24 Salida
26 Salida
30 Chrysler
31 Stanislaus

NOVEMBER
2 Stanislaus
6 Newman, Von Renner*
7 Newman, Von Renner*
9 Newman, Yolo*
13 Orestimba High*
14 Bonita*
16 Patterson, Northmead*
20 Patterson, Northmead*
21 Patterson, Las Palmas*
27 Patterson High*
28 Grayson (a.m.)*
28 Rising Sun (p.m.)*
30 Westport*

DECEMBER
4 Shiloh (a.m.)*
4 Paradise (p.m.)*
5 Hart-Ransom*
7 Hart-Ransom*
11 Salida*
12 Salida*
14 Chrysler*
18 Stanislaus*
19 Ceres High
21 Standiford

JANUARY
2 Sylvan
4 Sylvan
8 Empire
9 Empire
11 Hughson Elementary
15 Hughson Elementary
16 Hughson Elementary and Lebright
18 Keyes
22 Keyes
23 Turlock High
24 Turlock High
29 Denair Unified
30 Denair Unified

FEBRUARY
1 Chatom
5 Chatom
6 Ceres High*
8 Standiford*
13 Sylvan*
15 Sylvan*
19 Empire*
20 Empire*
26 Hughson Elementary*
27 Hughson Elementary*

MARCH
1 Hughson Elementary and Lebright*
5 Keyes*
6 Keyes*
8 Turlock High*
12 Turlock High*
13 Denair Unified*
15 Denair Unified*
19 Chatom*
20 Chatom*
22 Mt. View
26 Valley Home (a.m.)
26 Rosedale (p.m.)
27 Hickman (a.m.)
27 Milnes (p.m.)
29 Gratton (a.m.)
29 Roselawn (p.m.)

APRIL
2 La Grange (a.m.)
2 Roberts Ferry (p.m.)
3 Knights Ferry
5 Lowell Special School
9 Lowell Special School
23 Gratton (a.m.)
23 Roselawn (p.m.)
26 La Grange (a.m.)
26 Roberts Ferry (p.m.)
30 Knights Ferry

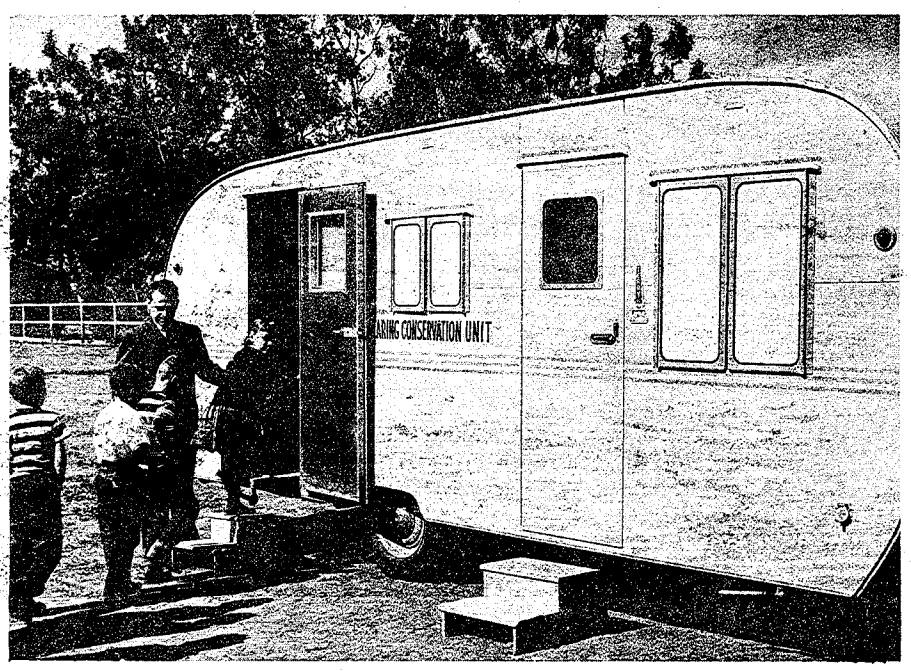
MAY
3 Mt. View*
7 Valley Home (a.m.)*
7 Rosedale (p.m.)*
8 Hickman (a.m.)*
8 Milnes (p.m.)*
10 Lowell Special School
14 Lowell Special School
15 Lowell Special School

*Dates of six-week recheck.

RMC:mlb
9/27/61 - 50

Form 2. Notice of hearing tests.

HEARING TESTS



The Stanislaus County
Schools Hearing
Conservation Unit

Dates of the annual hearing survey in _____School

SCREENING TESTS:_____

RECHECK TESTS:_____

Grades to be screened: Elementary--K, 1, 3, 5, 7, and 8; Secondary--10 and 12
(Referrals from other grades will also be screened)

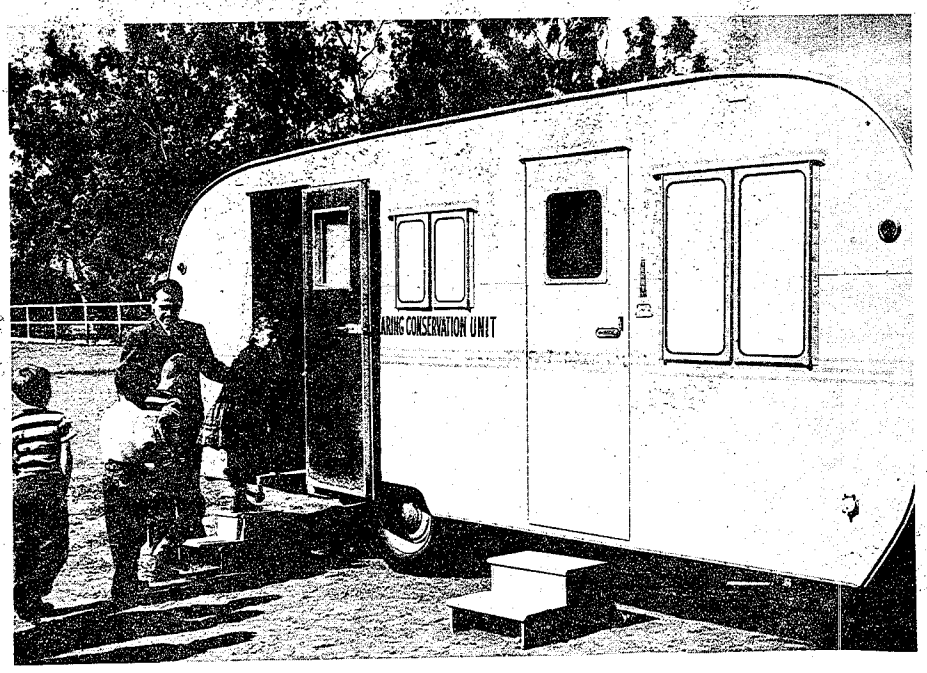
Pupils with special hearing problems may be referred at any time during the year through your administrator.

Copy for-- Teachers' Room
School Nurse
Administrator's File

RMC:mlb
9/25/61 - 140

Form 3. First grade poster.

MY TIME TO LISTEN!



This trailer is coming to our school on

_____,

_____.

I will go inside the trailer to have my hearing tested.

Maybe I will hear

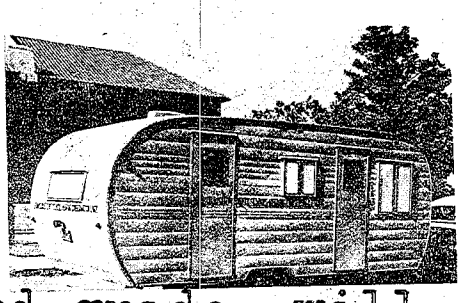
- a buzz,
- a hum,
- or a whistle.

When I hear it, I will put up my finger.

Form 4. Third grade poster.

Hearing Unit Coming!

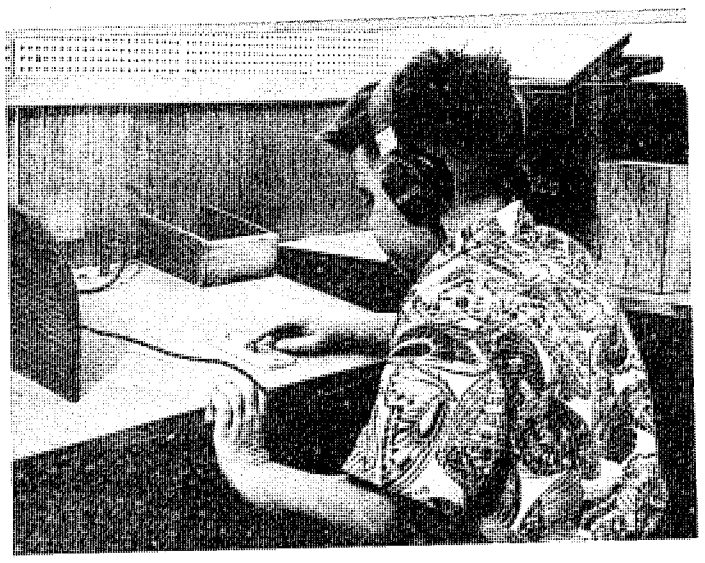
The mobile hearing unit will be at your school on _____ _____.



All boys and girls in the third grade will have their hearing checked. Maybe you were tested before. This test will be a little different.

Your class will go to the unit in groups of ten. After you are inside, sit down like the boys and girls in the picture.

Put the earphones on your ears. Then find the red button.



When you hear a sound like a buzz, hum, or whistle, push down the button. When the sound stops, take your finger off the button.

Just before your class is to be tested, this box will be passed around your room. Try pressing the button. The light will go on if you are doing it correctly.

Form 5. High school poster.

Hearing Tests

BEGINNING DATE_____

The Mobile Hearing Unit

WHO WILL BE TESTED?

All sophomores and seniors.
All freshmen and juniors who
(1) had hearing losses last year.
(2) did not have a hearing test last year.*
(3) have had recent earaches, running or "stuffy" ears.*

(*If this is your case, ask the office to include your name on the hearing test forms.)

DIRECTIONS

Ten are tested at one time.
The test consists of four soft tones introduced into each ear.
The tones resemble buzzes and whistles.
When you hear one, press the button in front of you. Keep the button down as long as you hear the tone. Respond quickly to the sound as it goes on and off.
Those who fail this test will be rechecked individually at a later date.

Students waiting for the group test to begin.

Close-up of button used in the test.

It takes fewer than five minutes

NO PAIN -- NO WRITING

You may have hearing diffuculty and not know it.
Hearing is lost so gradually that it is seldom noticed.
A hearing test can find hearing problems before they become serious or apparent.

Health Services -- Hearing Conservation -- Stanislaus County Schools
Office of FRED C. BEYER, Superintendent

Form 6. Hearing survey report-pupil list.

Stanislaus County Schools

OFFICE OF
Fred C. Beyer
SUPERINTENDENT
2115 SCENIC DRIVE
TELEPHONE LAMBERT 4-1251 MODESTO, CALIFORNIA POST OFFICE BOX 1697

School Health Services — Hearing Conservation

HEARING SURVEY REPORT

LIST PUPILS (PLEASE TYPE OR PRINT — MAKE COPIES LEGIBLE)

School _____ Date _____

Teacher _____ Grade _____ Room No. _____

Pupils' Names	O.K.	—	Loss	Pupils' Names	O.K.	—	Loss
1.				21.			
2.				22.			
3.				23.			
4.				24.			
5.				25.			
6.				26.			
7.				27.			
8.				28.			
9.				29.			
10.				30.			
11.				31.			
12.				32.			
13.				33.			
14.				34.			
15.				35.			
16.				36.			
17.				37.			
18.				38.			
19.				39.			
20.				40.			

Ⓟ5

When the hearing survey is completed:

1. A check in the "OK" column indicates normal hearing.
2. A check in the "Loss" column indicates a hearing loss (see audiogram).
3. Absentees (those unchecked) should be referred for a test next year.

Form 7. Hearing survey information for teachers, specific instructions.

Stanislaus County
DEPARTMENT OF EDUCATION
2115 Scenic Drive, Modesto, California
P. O. Box 1697 LAmbert 4-1251

FRED C. BEYER
Superintendent

Health Services - Hearing
R. M. Colville, Coordinator
of Hearing Services

- HEARING SURVEY -

Information for Teachers

The annual hearing survey will begin in your school on _____.

Each child in grades K, 1, 3,5, 7, and 8 will have his hearing tested. Children in grades 2, 4, and 6 will be checked on a referral basis only.

The attached form should be returned to your principal before the above date even though you may have no referrals.

Specific Instructions

TEACHERS IN GRADES K, 1, 3, 5, 7, 8, special and combination classes (two or more grades in the same classroom):

Please copy all pupils' names on the attached form in the same order as they appear in your class register. Since all of your children will be tested, no special referral is necessary.

TEACHERS IN GRADES 2, 4, 6:

Using the attached form, please write the names of--

1. Your children who are new in the school this year.
2. Children reporting recent earaches (ask your class about this).
3. Children who have exhibited a sudden change in behavior during the current school year.
4. Children who have had cotton in their ears.
5. Children who are mouth breathing.
6. Children otherwise suspected of having hearing difficulty.

Screening tests will probably be given in the following grade order: 1, 2, K (a.m.), 3, 5, 7, 8, 4, 6, K (p.m.).

Form H-6
RMC:mlb
9/61 - 300

Form 8. Third grade hearing test instructions.

STANISLAUS COUNTY SCHOOLS
: Office of FRED C. BEYER, Superintendent
: 2115 Scenic Drive, Modesto, California
: LAmbert 4-1251 P. O. Box 1697

Health Services - Hearing

INSTRUCTIONS - HEARING TEST

TEACHER:

1. PLEASE HAVE EACH PUPIL COMPLETE A NAME SLIP, which is to accompany him when he goes to the mobile hearing unit.

2. A poster explaining the hearing test was sent to you on a previous date.
PLEASE REVIEW THE POSTER WITH YOUR CLASS NOW to prepare your pupils for the test.

- OTHER INFORMATION -

Your class will probably be taken for the hearing tests within a half hour. The groups of ten will be called for at intervals of about five minutes. The class should otherwise remain in the room until the testing is completed (except during regular dismissal times.)

This is only a screening test. Those who fail will be rechecked next month. Rechecks and today's absentees will be called for on another day of the survey. Teachers may also have the hearing test, either with their pupils or after school.

RMC:mlb:mp
3/61 - 60
Form H-4

Form 9. Upper grades hearing test instructions.

Stanislaus County
DEPARTMENT OF EDUCATION
2115 Scenic Drive, Modesto, California
P. O. Box 1697 LAmbert 4-1251

FRED C. BEYER
Superintendent

Health Services - Hearing

HEARING TEST INSTRUCTIONS

TEACHER:

Your class will be next to receive the hearing test-- probably within fifteen minutes. Pupils will be called for in groups of ten in five-minute intervals.

Pupils must otherwise remain in the classroom until the testing is completed (exceptions: fire drill and regular dismissal times--lunch, recess, end of school day).

Please have each pupil complete a name slip, which is to acccmpany him to the mobile hearing unit.

The following instructions should be read to your class:

INSTRUCTIONS TO PUPILS

1. IN A FEW MINUTES YOU ARE GOING TO HAVE YOUR HEARING TESTED. YOU WILL BE TAKEN TO THE HEARING TRAILER IN GROUPS OF TEN.

2. WHEN YOU ARE INSIDE THE TRAILER, SIT DOWN FACING A PAIR OF EARPHONES.

3. IN FRONT OF YOU WILL BE A RED BUTTON.

4. DURING THE TEST YOU WILL HEAR SOME SOFT WHISTLE AND HUMMING SOUNDS. PRESS THE BUTTON WHEN YOU HEAR EACH SOUND.

- OTHER INFORMATION FOR THE TEACHER -

The hearing test being administered today is a screening test. Those who fail will be rechecked in about six weeks. Pupils who are absent today will be called for on another day of the survey.

You may also have the hearing test, either with your class or after school hours.

RMC:mlb
Form HC-3

For room #_____

STANISLAUS COUNTY SCHOOLS
-Hearing Conservation-

Name_____

Grade (underline):
Freshman, Sophomore, Junior,
Senior

P.E. Period (underline):
1 - 2 - 3 - 4 - 5 - 6 - 7

STANISLAUS COUNTY SCHOOLS
Special Services
Hearing Survey

Name_____

Grade_____

Teacher_____

Form 10. Pupil name slips.

Form 11. Pure tone audiogram.

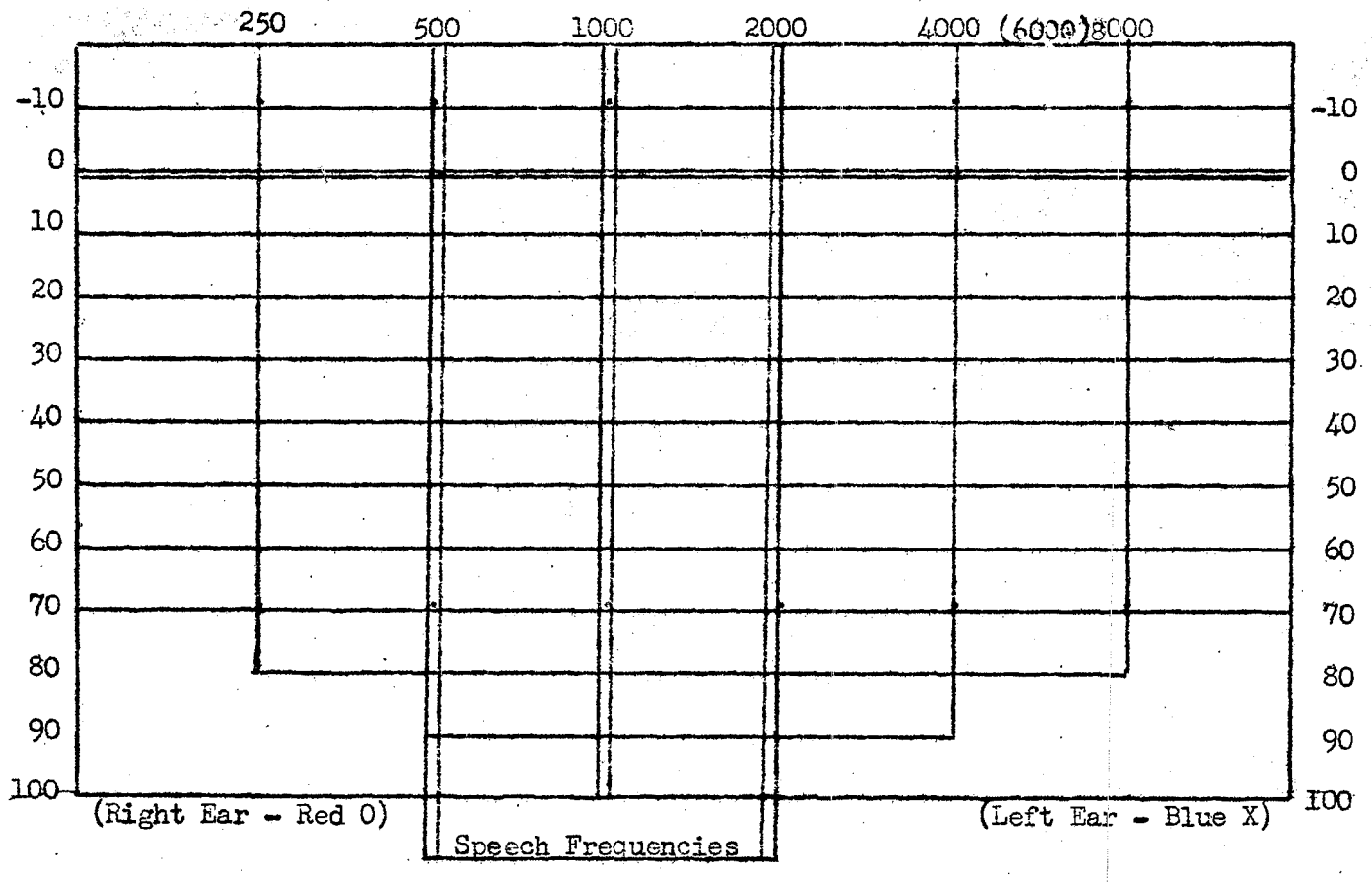
STANISLAUS COUNTY SCHOOLS

Office of FRED C. BEYER, Superintendent
2115 Scenic Drive, Modesto, California
Telephone LAmbert 4-1251 P.O. Box 1697

Health Services
R. M. Colville,
Hearing Consultant

PURE TONE AUDIOGRAM

LAST NAME | FIRST NAME | INITIAL | AGE | GRADE | SCHOOL | TEST DATE



Testing Data:

Difficult to test ☐
Ear not shown is within normal limits (15db.) ☐
Normal ear masked with ___ db.
Recheck period has been ___ days

Nurse-Parent Conference ☐

COMMENTS

Symptoms Reported:

Earaches ☐
Drainage ☐
Tinnitus ☐
Mouth breathing ☐
Harsh voice ☐

Status:

Recheck ☐
Old case ☐
C.C.S. ☐

Dr._____

Form 12. Old case--unchanged.

STANISLAUS COUNTY SCHOOLS
: Office of FRED C. BEYER, Superintendent
: 2115 Scenic Drive, Modesto, California
: Telephone LAmbert 4-1251 P.O. Box 1697

Health Services
R. M. Colville, Audiometrist and
Hearing Consultant

OLD CASE--UNCHANGED

LAST NAME	FIRST NAME	INITIAL	AGE	GRADE	SCHOOL	TEST DATE

Pure tone audiometric examination revealed no progression or other signigicant change as compared with previous audiograms.

This individual has a type of hearing loss which does not constitute a disability. No special classroom or educational adjustments, therefore, are necessary or recommended at this time.

Frequencies (tones) which are not within normal limits (15 db.).

	500	1000	2000	4000	6000	c.p.s.
Right ear						decibels
Left ear						decibels

Speech range

RMC/z
400
5-60

Form 13. Hearing recheck.

Stanislaus County
DEPARTMENT OF EDUCATION
2115 Scenic Drive, Modesto, California
P. O. Box 1697 LAmbert 4-1251

FRED C. BEYER
Superintendent

Health Services -- Hearing
R. M. Colville
Audiometrist - Hearing Consultant

HEARING RECHECK FORM

LAST NAME	FIRST NAME	INITIAL	AGE	GRADE	SCHOOL	TEST DATE

Pure tone audiometric examination revealed normal hearing with the slight deviation indicated below.

No medical referral is recommended at this time. This individual should be rechecked during the next annual hearing survey.

	500	1000	2000	4000	6000	c.p.s.
Right ear						decibels
Left ear						decibels

TEACHER:

Since this slight hearing loss does not represent a disability, no special classroom or educational adjustments are necessary at this time.

Please observe this pupil closely during the next few months for these symptoms:

1. Difficulty hearing
2. Frequent illnesses
3. Prolonged colds
4. Earaches or running ears

If these conditions develop, please refer the pupil through the school administrator for an immediate recheck.

RMC:mlb
2/23/62 - 300

Form 14. Letter to school administrator--hearing report.

STANISLAUS COUNTY SCHOOLS

: Office of FRED C. BEYER, Superintendent
: 2115 Scenic Drive, Modesto, California
: Telephone LAmbert 4-1251 P.O. Box 1697

DATE_____,19

Health Services - Hearing

TO:
FROM: Robert M. Colville, Audiometrist and Hearing Consultant

Enclosed is a report of the hearing survey recently completed at your school. The contents are as follows:

1. Principal's Report (for the administrator's file)

   (a) Summary Sheet - a statistical account of the survey.
   (b) Hearing Loss Sheet - a list of the children in your school with impaired hearing.
   (c) Disposition of Old Cases - a list of former hearing cases testing within normal limits in the survey and those who transferred from the district.
   (d) Additional Nurse Referrals - a list of children having symptoms but no loss at the time of testing.
   (e) Hearing Survey Report Form - a complete list of every child who was tested including the results arranged by teacher and grade.

2. Teachers' Reports (to be distributed to the teachers)

   (a) Class List - one for each teacher whose children were tested. This is to be used by the teacher for recording on each child's health record. The entry should be placed in the current year's column after "Hearing Score (Pure Tone)" of the health record. If hearing is normal, mark "N". A child with a hearing loss should have the notation "FT" (fails test) or "See audiogram". Rubber stamps for this purpose are available.
   (b) Audiograms - graphic representations of children's hearing losses. These are to be filed permanently in the child's health folder.

3. Nurse's Report (to be forwarded to your school nurse)

   (a) Hearing Loss Sheet - two copies.
   (b) Audiograms - for processing children with a hearing loss (nurse, doctors, otology clinics, etc.).
   (c) Old Cases Returned to Normal.

Your school nurse will make any and all necessary home contacts and will give the essential medical advice to the child and his parents. Please advise your teachers in this regard.

If you desire any further information concerning these reports, please contact me. It may be desirable to discuss the hearing program and interpret the audiogram at a meeting of your teachers. I am also available and anxious to place the program before parent groups, for it is with them that we have our greatest need for cooperation.

Suggestions for improving these reports or our hearing services would be appreciated

Elementary
RMC:mlb
4/59 - 100

Form 15. Hearing loss sheet.

STANISLAUS COUNTY SCHOOLS

Office of FRED C. BEYER, Superintendent
2115 Scenic Drive, Modesto, California
Telephone LA 4-1251 P. O. Box 1697

Health Services - Hearing
R. M. Colville, Audiometrist,
Hearing Consultant

HEARING LOSS SHEET

SCHOOL _____

DATE _____

	NAME OF PUPIL	AGE	GRADE	DISPOSITION
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				

RMC:gg
3/7/57

Form 16. Additional nurse referrals.

STANISLAUS COUNTY SCHOOLS

: Office of FRED C. BEYER, Superintendent
: 2115 Scenic Drive, Modesto, California
: Telephone LAmbert 4-1251 P.O. Box 1697

Health Services - Hearing Conservation

ADDITIONAL NURSE REFERRALS

School_____

Date_____

Because of symptoms observed during the annual hearing survey, the following pupils, who did not have hearing losses, are recommended for a throat examination by the school nurse.

Name	Grade	Teacher

RMC:mlb
3/59 - 100

Form 17. Hearing survey statistical summary, elementary.

STANISLAUS COUNTY SCHOOLS

Office of FRED C. BEYER, Superintendent
2115 Scenic Drive, Modesto, California
Telephone LA 4-1251 P. O. Box 1697

Health Services - Hearing
R. M. Colville, Audiometrist,
Hearing Consultant

HEARING SURVEY

STATISTICAL SUMMARY

School _____

Date _____

GRADE	NUMBER PUPILS TESTED	NUMBER PUPILS WITH HEARING LOSS
Kindergarten		
1		
2		
3		
4		
5		
6		
7		
8		
Special	___	___
TOTALS:	___	___

Percentage of those tested who were found to have a hearing loss: ___%

RMC:gg
3-4-57
Elem.

Form 18. Disposition of old cases.

STANISLAUS COUNTY SCHOOLS

Office of FRED C. BEYER, Superintendent
2115 Scenic Drive, Modesto, California
LAmbert 4-1251 P.O. Box 1697

School_____

Date_____

DISPOSITION OF OLD CASES

On the above date the following old hearing loss cases had either returned to normal limits of hearing or transferred from this school district as indicated.

NAME	AGE	GRADE	NORMAL HEARING	TRANSFERRED

RMC:vmc
2/19/58
200 copies

Form 19. Report to speech consultant.

STANISLAUS COUNTY SCHOOLS

: Office of FRED C. BEYER, Superintendent
: 2115 Scenic Drive, Modesto, California
: Telephone LAmbert 4-1251 P.O. Box 1697

_____
Date

TO: _____, Speech Consultant
FROM: Bob Colville, Audiometrist-Hearing Consultant

A hearing survey of the _____School District was completed on this date.

Audiograms are attached of those pupils who qualify and are recommended for lip reading instruction.

The following pupils had a hearing loss for speech at the time of the survey but are not recommended for lip reading at this time:

Name	Grade	Teacher

RMC: mlb
3-60-75

APPENDIX C

Otologist questionnaire.

STANISLAUS COUNTY SCHOOLS

: Office of FRED C. BEYER, Superintendent
: 2115 Scenic Drive, Modesto, California
: Telephone LAmbert 4-1251 P.O. Box 1697

STANISLAUS COUNTY SCHOOLS HEARING CONSERVATION PROGRAM

QUESTIONNAIRE (Otologists)

I. Purpose: To assist the County Schools Office in evaluating and improving the hearing conservation program.

II. Current criteria for the medical referral of hearing losses.

A. A loss of 20 decibels or more in three or more of the following frequencies: 250, 500, 1000, 2000, 4000, and 6000 cycles per second.

B. A loss of 35 decibels or more in any one of the following frequencies: 250, 500, 1000, 2000 or 4000 c.p.s.

III. Questions. Please respond to the following (use other side if needed):

A. Do you feel that the above criteria are satisfactory? _____YES _____NO

Please indicate any changes you would suggest._____

_____

B. Do you feel that medical referral is indicated for cases having a 35 db. loss at 4000 c.p.s. but with no loss in other frequencies? _____YES _____NO
If not, which high frequency losses do you feel should be referred?

_____

_____

C. Do the audiograms which you receive from the schools usually contain the kinds of information you need? _____YES _____NO

Please indicate any suggestions you may have for improving the audiogram form.

_____

D. Please indicate any other information or improved services which you would like to have from the schools concerning hearing loss cases.

_____

E. Please enter other comments you may wish to make._____

_____

Please return this questionnaire by _____.

Nurse questionnaire (sheet 1).

STANISLAUS COUNTY SCHOOLS

Office of FRED C. BEYER, Superintendent
2115 Scenic Drive, Modesto, California
Telephone LAmbert 4-1251 P.O. Box 1697

STANISLAUS COUNTY SCHOOLS HEARING CONSERVATION PROGRAM

QUESTIONNAIRE (Nurses)

I. Purpose: To assist the County Schools Office in evaluating the hearing conservation program.

II. Statement of Current Practice

A. Threshold audiograms are made of pupils who have the following losses:

1. 20 decibels or more in three or more of the following frequencies: 250, 500, 1000, 2000, 4000, and 6000 cycles per second.

2. 35 decibels or more in any one of the following frequencies: 250, 500, 1000, 2000, or 4000 cycles per second.

B. A "hearing recheck" form is usually completed for losses which do not qualify for threshold audiograms and are intended only for later rechecking.

C. An "old case, unchanged" form is usually completed for pupils with former high frequency losses which have not changed significantly. Only the threshold of frequencies not within the normal limits are indicated on the form.

III. Would you please respond to the following questions?
(If more writing space is needed, use other side.)

A. Would you like to see the above referral criteria and practices changed in any way? _____YES _____NO.
If so, what changes would you suggest?_____

_____

B. If you do not choose to refer for medical care a loss of 35 db. at 4000 c.p.s. only, please describe high frequency losses which you would feel secure in referring._____

_____

_____

C. Do you occasionally refrain from reporting cases to parents for which an audiogram has been completed? _____YES _____NO. If so, please give a typical example._____

_____

D. Do the audiogram forms which are used provide you with sufficient kinds of information for adequate processing? ____YES ____NO

E. What suggestions do you have for improving the audiogram form?

_____

_____

F. Do the reports of annual hearing surveys provide you with the information needed in your follow-up and recording procedure? ____YES ____NO. What, if any, changes, omissions, or additions would you suggest to improve the hearing reports?_____

_____

G. A good hearing conservation program is dependent upon good working relations among the following personnel and agencies. Please check those with which you have experienced difficulty and describe typical problems.

____Audiometrist - Hearing Consultant

____Speech therapist

____School administrator

____School nurse

____School psychologist

____Parents

____General practice physicians

____Otologists

____Health Department

____C.C.S. administration

____Other

Please return this questionnaire by Friday, June 17, 1960.

Nurse questionnaire (sheet 2).